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On the Occurrence of Carcinoma in Cystic Teratomata of the Ovary.

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IT is a matter of common knowledge that the majority of cystic ovarian teratomata are innocent tumours. They grow slowly, they are enclosed in a definite capsule, they neither invade the tissues of adjacent organs nor infect lymphatic glands, and finally, save in so far as they may give rise to severe pressure symptoms, or may be the starting point of a grave septic infection, they do not endanger the life of the patient. It is now clearly demonstrated that the majority of solid ovarian teratoma are tumours of intense malignancy, invading surrounding structures, giving rise to metastatic deposits, and in many cases directly causing death within a few months of the recognition of the primary growth. In the light of these facts, and seeing that in so far as their naked eye and microscopical appearances are concerned the differences between cystic and solid embryomata are matters of degree rather than of kind, it becomes essential to enquire whether the innocency of the cystic tumours may always be assumed, or whether we ever find these growths possessing malignant characters.

Before entering upon this question reference must be made to the phenomenon sometimes called "epithelial infection," for secondary growths the result of epithelial infection have sometimes been mistaken for malignant deposits, and from the presence of these secondary growths it has been deduced that the primary tumour must be of a malignant nature.

Other writers have fallen into error in the opposite direction, and recognizing the occurrence of epithelial infection have asserted that ovarian "dermoids" are invariably innocent tumours. Thus Mr. Bland Sutton writes in the second edition of his book "Surgical Diseases of the Ovaries and Fallopian Tubes":—"In the first edition of this work I thought the facts pointed in the direction of

occasional malignancy, but four years' further study of the matter in the wards, post-mortem room, and laboratory has served to convince me that the innocency of ovarian dermoids cannot be impeached with the scanty and unreliable evidence at present available." (Page 77.)

The phenomenon of epithelial infection is exhibited occasionally by many varieties of ovarian cysts. So long as the essential elements of the tumour are confined within the cyst-wall, no secondary implantation growths are found; but, should rupture of the cyst occur, detached portions of epithelium may become implanted upon a peritoneal surface, or upon the raw tissues of a wound, and there grow—reproducing in their growth the characters of the parent cyst. These secondary growths, however, are not malignant, they do not invade and destroy the tissue upon which they have become implanted, they persist merely as surface growths, and in some instances, in course of time, become smaller and ultimately disappear. This phenomenon is familiar to all in the cases of ovarian papillomata. Pressure upon the cyst-wall by the papillomatous masses not uncommonly leads to thinning and rupture, detached portions of epithelium become implanted upon the peritoneum-clad abdominal walls and viscera which, at operation, are found covered by innumerable surface growths. The secondary growths often enjoy only a transient life, and if the parent cyst—the seed supply—be removed, usually shrivel and disappear.

Amongst the pseudomucinous cyst-adenomata it is only rarely that we find implantation growths. In 1885 Olshausen reported a case of cyst-adenoma of the ovary with implantation metastases in various parts of the peritoneal cavity; the secondary implantation growths contained proliferating glandular tubules similar to those of the primary tumour. Since that time many cases have been recorded of ovarian adenomata with implantation growths in the omentum, the intestines, the peritoneum and in the site of the abdominal wound after operation. In some of these cases masses of pseudomucin weighing as much as forty pounds have been removed from the peritoneal cavity, and repeated operations extending over a period of some years have had to be undertaken. Hirst (*Amer. Jour. Obst.*, 1906, p. 345) has reported an interesting case of this kind. A multipara, aged 50, consulted him on account of procidentia uteri. The thickness of the abdominal walls made examination very difficult. On opening the abdomen to perform ventral fixation of the uterus a mass of pseudomucin weighing fifteen pounds was found free in the peritoneal cavity, and in the situation of the left ovary was a pseudomucinous cyst-adenoma perforated and collapsed. "Two typical daughter-cysts, the size of a cherry, were found in the wall of the ileum, one exhibiting a spontaneous perforation of its wall through which clear pseudo-mucin was oozing." The main cyst and the

daughter cysts were removed. The case was reported six months after the date of the operation and up to that time there was no evidence of fresh cyst formation.

When we turn to the cystic teratomata we find scattered through the literature cases of a similar nature. One of the best known of these was published by Moore in vol. xviii. of the Transactions of the Pathological Society of London:—"A married woman, aged 28, for ten years had an abdominal tumour which commenced low down on the right side. Three years before she came under observation she bore a small child at the full period. The tumour at that time was half its present size. A month ago she felt pain and swelling about the navel. Nine days ago the navel opened and a good deal of pus came away." When admitted into the Middlesex Hospital the abdomen was larger than at the full period of gestation, prominent and uneven, and when pressed upon a stream of pus mixed with pultaceous material escaped from the navel. The woman was very ill and presented the signs typical of a septic intoxication, frequent pulse, raised temperature, dry tongue and harsh skin.

Operation, May 1st, 1866. "After chloroform had been administered, Mr. Moore enlarged the opening at the navel by an incision in the linea alba, three inches in length, and opened a cyst, but not the peritoneum. This opening disclosed a vast quantity of pultaceous epidermal secretion of a cyst, mixed with hairs. Here and there a little bone grew in or from the cyst wall. A little below the incision an incomplete septum could be felt dividing the cyst into two parts, and in the lower part could be felt a fixed fleshy mass, riddled with openings and containing tooth-like projections of bone. About seven pounds of the putty-like stuff were scooped out of the two compartments of the cyst; and with the view of preventing the offensive odour which was likely to arise, the cavity was washed out with about three pints of a tepid lotion of the chloride of zinc, of the strength of twenty grains to the ounce."

As the result of the operation the patient's condition improved for a time, but a relapse occurred, she gradually became weaker and died on May 8th.

Post mortem the greater part of the abdominal cavity was occupied by a large cyst of the left ovary. The cyst-wall was adherent to the abdominal parietes, the intestines, omentum and other viscera. The wall of the cyst was tough and composed of dense fibrous tissue in which deposit of calcareous salts had taken place. In the cavity were loose hairs and pultaceous matter; attached to the posterior wall was a fleshy mass riddled with holes and spaces and covered in parts by a thin red membrane in which were embedded many small but perfectly formed teeth resembling the bicuspids and incisors of the milk dentition. "Among the

peritoneal adhesions were many small cysts, some of which were attached by slender pedicles to the main cyst whilst others were entirely unconnected with it but, like it, contained soft, cheesy, yellow epithelium mixed with hairs. One was in the great omentum. Two, which were in or near the right broad ligament and of the sizes of a nutmeg and a walnut, had ossified or chalky walls. Many small ones were in situations where they might have been supposed to be diseased absorbent glands, as in the pelvis and mesentery; but as perfectly healthy glands were found near them and there was no trace of enlargement of any lymphatic vessels, they were probably external to the absorbent system. The largest of the loose cysts lay among the adhesions of the small intestines. It was completely separated by the bowels from the principal cyst and was rather larger and longer than a hen's egg."

There is no record of microscopical examination, but the very careful description of the post mortem appearances leads to the conclusion that the numerous small cysts were of the nature of implantation growths rather than malignant disease.

The possibility of epithelial infection is perhaps most clearly established in a case published by Fraenkel (*Wien. med. Wochenschr.*, 1883, p. 865). The patient, a woman thirty-five years of age, had for some time been conscious of the presence of an abdominal tumour. Nine months previous to admission into hospital she fell from a cart. The fall was followed by increase in the size of the tumour and by symptoms of peritonitis. When the peritoneal cavity was opened at operation, fluid containing sebaceous matter and hair escaped. A "dermoid" cyst, with a rent in its wall, was discovered in the situation of the left ovary. Attached to the parietal peritoneum were numerous small "dermoids" some possessing long thin stalks, and larger ones were attached to the liver, the mesentery and the diaphragm. The secondary cysts showed no signs of malignancy.

The mother cyst may have ruptured as the immediate result of the fall, or more probably acute torsion of the pedicle may have resulted in degenerative changes of the wall with rupture at some subsequent period.

Other cases which we accept as undoubted instances of epithelial infection are Kolatzetl's case published in *Virchow's Archiv*, Bd. lxxv, p. 399, and Grawitz's case published on page 262 of the same volume. Such a phenomenon is, however, undoubtedly rare in the case of ovarian "dermoids," and no instance has come under our personal observation.

These cases must not blind us to the fact that ovarian "dermoids" are occasionally malignant tumours, in some instances showing the structure of carcinomata, in others of sarcomata. We propose to review briefly the evidence upon which this statement rests and to

record such details as we are able of four cases hitherto unrecorded of squamous-celled carcinoma arising in ovarian "dermoids."

Carcinomata.

As pointed out by Lindsay Peters (*Johns Hopkins Hospital Bulletin*, vol. xi, page 78) in discussing the relation of carcinoma to ovarian "dermoids" we must remember that a "dermoid" may be invaded from without by a malignant growth. The association here is merely an accidental one, comparable to the invasion of a fibroid by a carcinoma arising from the uterine mucosa. We may group all the recorded cases in which dermoid cysts and carcinomata are associated in the same ovary into three classes.

(1) Cases in which an ovarian "dermoid" has been invaded by carcinoma arising in an adjacent organ.

(2) Cases in which two tumours have been found in the same ovary the one a "dermoid" cyst the other a carcinoma.

(3) Cases in which the carcinoma has arisen from the epithelial structures of the "dermoid" cyst itself.

We shall content ourselves with quoting one example only of the first two groups, and consider in greater detail those of group 3.

Group i. *Invasion of a "dermoid" by a carcinoma arising in an adjacent viscus.*

E.M., aged 41, the mother of four children, the youngest of whom was six years of age, was seen in February 1907. She was suffering from intestinal obstruction; the abdomen was distended and there was absolute constipation, no fæces or flatus having been passed for five days. Vomiting had persisted for three days, and for the last twenty-four hours the odour of the vomitus had been distinctly fæcal. A tumour was felt in the left iliac fossa, and on opening the abdomen was found to consist partly of the sigmoid flexure of the colon enlarged by a mass of growth and partly of an ovarian "dermoid" adherent to the bowel. A colotomy was performed, but the patient survived only a few hours. Autopsy revealed a columnar-celled carcinoma of the sigmoid which had invaded the wall of the ovarian "dermoid."

Group ii. *Two tumours co-existing in the same ovary, the one a dermoid the other a carcinoma.*

A patient, 36 years of age, was admitted to the Johns Hopkins Hospital on April 6 1897 (Lindsay Peters, *loc. cit.*). She was the mother of six children, and was in good health until August 1906, when she suffered from some acute illness, associated with fever, which confined her to her bed for two weeks. Since that time she had suffered from pain over the left iliac fossa much worse at her

menstrual periods. At the operation, Howard Kelly found both ovaries enlarged, cystic and adherent to the uterus. The uterus and ovaries were removed, but at the end of the operation nodules were noticed in the omentum.

On examination after removal the right ovary contained two tumours. Near the hilum was a "dermoid" cyst lined by stratified squamous epithelium and containing sebaceous glands, whilst the rest of the ovarian tissue was almost replaced by irregular masses and columns of oval and cuboidal epithelial cells. At some places the carcinoma cells had invaded the walls of the "dermoid" cyst.

The subsequent history of the patient has not been recorded.

Group iii. *Carcinomata originating in ovarian "dermoids."*

As pointed out previously the majority of ovarian "dermoids" are extremely complicated tumours and contain epithelial elements in great variety. In the specimens we have investigated we found epithelium of both the glandular and the squamous type, and theoretically therefore we may meet with carcinomata of both the glandular and the squamous-celled variety. Both are rare. Indeed the existence of the former, although probable, has not been conclusively proved. We can find only one case recorded, and the investigation of this specimen presented such grave difficulties that in spite of a most careful and thorough examination the interpretation of the appearances seen is a matter of probability rather than of definite demonstration.

Yamagiva, Professor of Pathology in the University of Tokio, published in *Virchow's Archiv* (1897, Bd. cxlvii, S. 99) an instance of what he believed to be a carcinoma of the glandular type originating in a cystic teratoma of the ovary.

The patient was a woman, 63 years of age, admitted to hospital with an abdominal tumour rising out of the pelvis and reaching to the level of the umbilicus. An examination made after death revealed that the retro-peritoneal, the mesenteric and the supra-clavicular glands were extensively infiltrated with malignant growth. The tumour occupied the situation of the right ovary. It consisted of one main loculus containing 5 litres of fluid and constituting nearly two-thirds of the entire mass, and of a number of smaller loculi. One part of the wall of the main cyst was thickened and of cartilaginous hardness, embedded in this were portions of bone, whilst projecting from its surface were irregular warty brown masses, and at one spot was a soft nipple-like projection one and a half centimetres in diameter. The microscopic examination of the tissues was conducted with great thoroughness and Yamagiva arrived at the conclusion that the tumour was a composite one, some of the loculi were "dermoid," some cyst-adenomatous and others follicular. Parts of the tumour showed unmistakable carcinoma of the

glandular type, and Yamagiva satisfied himself that he could trace the origin of the cancer to certain glandular structures found in association with the nipple-like projection mentioned above, and constituting an anomalous mammary gland. The descriptions given and the arguments used are not sufficiently convincing to enable us to accept this case as an undoubted instance of glandular cancer arising in an ovarian "dermoid." That such a phenomenon may occur is probable—but we think not yet proved. No instance of carcinoma of the sweat glands or sebaceous glands of an ovarian "dermoid" has yet been recorded.

Previously Recorded Cases.

Squamous-celled Carcinoma. We find records of and references to 32 cases of reputed squamous-celled carcinoma of ovarian "dermoids." Of these cases we reject 14, in which the account is too scanty and the examination too incomplete to justify the diagnosis, or in which the original descriptions have been mis-quoted by later writers. Thornton's case for instance is alluded to by more than one author as a squamous-celled carcinoma, but Thornton described it as a sarcoma. In 16 of the cases, although the proof is not always quite complete, the probabilities are so great that we accept them as instances of squamous-celled carcinoma. In 2 cases we are unable to verify the references.

The twelve cases rejected.

1. Heschl. *Prager Vierteljahrschr.*, 1860, Bd. lxviii, S. 57.
2. E. von Wahl. *Petersburger med. Wochenschrift*, 1883, S. 70.
3. Cohn. *Zeitschr. für Geb. und Gyn.*, 1886, Bd. xii, S. 36.
4. Veit. *Zeitschr. für Geb. und Gyn.*, 1890, Bd. xix, S. 329.
5. Pomorski. *Centralblatt für Gynäkol.*, 1889.
6. Thornton. *Trans. Obstet. Soc. Lond.*, 1885, p. 46.
7. Babinski. (Two cases.) *Progrès Méd.*, Paris, 1884, xii, p. 29.
8. Oliver. *Liverpool Med. and Chir. Journ.*, 1891, vol. xi, p. 270.
9. Morrison *Edin. Med. Journ.*, 1894, vol. 40, p. 536.
10. Targett. *Proc. Roy. Soc. Med.*, vol. iii, No. 6, p. 145; Obstet. Sect., Case ii reported.
11. Wilms. *Deutsche Archiv. f. klin. Med.*, vol. lv.
12. Klokow. *Inaug. Diss.*, Königsberg, 1901.
13, 14. Gebhard. *Path. Anat.*, Female Sexual Organs, 1899, reference to 3 cases: first and third cases.

Articles not accessible.

15. Pottion. Jena, 1887.
16. Shoemaker. *Trans. American Assoc. of Obstet. and Gyn.*, 1890, vol. iii, p. 353.

Accepted cases.

None of the cases reported prior to 1885 can be fully accepted, some were obviously solid teratoma and in others no account of the microscopical appearances is given.

(1) Bierman's Case (*Prager med. Wochenschr.*, 1885, No. 21, S. 201) is therefore the earliest authentic case. A woman, aged 21 years, had died from the effects of a rapidly growing abdominal tumour. The tumour originated in the right ovary; it is described as four times the size of a man's head. It consisted of two parts, one composed of cystic spaces separated from one another by dense fibrous septa and filled with fatty material, the other harder and more solid; in both parts were cartilage and islands of bone.

Secondary deposits were found in the left ovary, the under surface of the diaphragm, the liver, and the retro-peritoneal lymphatic glands.

Microscopic examination showed that the cystic spaces were lined by cubical or columnar epithelium. There were present also areas of skin containing hair follicles, sebaceous glands and structures which Bierman took for sweat-glands. From these areas of skin masses of squamous-celled carcinoma penetrated deeply into the surrounding structures.

The description of both the naked-eye and the microscopic characters of this tumour agree very closely with the appearances seen in solid embryomata, and it is quite possible that the tumour may have been of this nature. There seems to be no doubt, however, of the presence of squamous-celled carcinoma in it, and for this reason we think it right to include it in the list of accepted cases.

(2) Himmelfarb (*Centralblatt für Gynäkol.*, 1886) records a very similar case in a woman 55 years of age. In this case, however, the tumour was clearly a cystic not a solid embryoma.

(3) In 1887, Krukenberg (*Archiv für Gynäkol.*, 1887, S. 241) examined a specimen which demonstrated much more clearly than those previously described the origin of the carcinoma. The ovary in this case contained two " dermoid " cysts, one the size of a walnut the other the size of a fist. The wall of the larger cyst contained several scattered patches of skin, and from the patches masses of squamous-celled carcinoma penetrated deeply into the cyst wall. In some places the wall was entirely replaced by cancerous growth. The smaller cyst was involved only secondarily, but at one spot the wall was invaded by extension of growth from the larger cyst. Metastatic deposits were found in the pelvic glands, the omentum, and on the surface of the peritoneum.

(4) Tauffer (*Virchow's Archiv*, 1895, Bd. clxvii, S. 389) reports a case in which the carcinomatous growth could be traced clearly to the squamous-celled lining of the cyst. In this case there were metastases in the iliac and retro-peritoneal glands.

(5) Thumin (*Archiv für. Gynäkol.*, 1897, S. 547) has recorded a case of great clinical interest. The patient, sixteen years previously, had suffered from an attack of pelvic peritonitis, this led to an examination and the discovery of a tumour. She consulted Sir Spencer Wells, who regarded the tumour as a uterine fibro-myoma, and advised no operation should be performed. During the next fifteen years the tumour increased slowly in size; it caused some pain and discomfort but no acute symptoms. At the end of this period a second attack of acute pain led her again to consult Sir Spencer Wells, who again advised against operation. As the pain still continued, some months later she went over to consult Landau who operated and found a dermoid cyst containing a mass of squamous-celled carcinoma which had invaded the abdominal wall. The cyst together with the part of the abdominal wall involved was removed, but the patient died of recurrence six months later.

(6) Yamagiva (*Virchow's Archiv*, Bd. cxlvii, S. 99), in addition to the case of glandular carcinoma mentioned, has recorded an instance of squamous-celled carcinoma.

(7) Clark (*American Journal of Obstetrics*, September 1898, page 305), when working in the Pathological-Anatomical Institute of Prof. Chiari in Prague, re-examined one of the museum specimens, an ovarian tumour partly cystic, partly solid, the size of a child's head. The solid part of the tumour appeared to have grown from the cyst-wall whilst to another part of the wall was attached a wart-like projection from which sprang a number of hairs. The only history obtainable was that in the following brief note: "Removed by abdominal section from a woman, 29 years old, by the late Prof. Briesky, May 29 1885. At the same operation a metastatic nodule, the size of a walnut, was removed from the left axilla. The patient made a good recovery from the operation. Her subsequent history is not known."

Microscopic examination showed that the tumour was an ovarian "dermoid," whilst the solid portion was a mass of squamous-celled carcinoma.

This case is of the highest value because of the thorough investigation of the specimen, and because Clark was able to trace the origin of the cancer to the epithelial layers of the dermal area of the cyst wall. We quote part of his description:—

"*Junction of the cyst-wall with the tumour.* Sections from this area show the normal epidermis approaching the tumour in wave-like folds . . . . . Approaching the cancerous area . . . . . the regular layers are no longer preserved, the cells being heaped up in a confused mass, and all are of the large flat variety with large oval nuclei and deeply staining protoplasm . . . . . Approaching the main body of the new growth, the epithelium loses all semblance to an orderly arrangement and begins to encroach upon the under-

lying tissue, in some cases forming well-marked cancerous projections." Cell-nests were present, but not in such numbers as in Bierman's case. The metastatic nodule from the axilla represented the same form of cancer as described above. The connective tissue was more abundant, and the alveoli smaller and more crowded with epithelial cells which presented all the appearances of active vigorous proliferation.

(8) Lockhart and Anderson (*Montreal Med. Journ.*, 1889, vol. 28, p. 116). The patient was an unmarried woman, aged 50 years, in whom operation was undertaken for a large tumour of the left ovary complicated by torsion of the pedicle. The tumour contained 120 ounces of thick grumous material mixed with caseous matter and hair. It had formed many dense adhesions with intestines, omentum, the under surface of the liver and the anterior abdominal wall. The patient recovered from the operation but died one week after her discharge from hospital.

The tumour was a large irregular-shaped mass weighing 1,570 grams. It was composed of a series of thick-walled cysts, contained two rounded masses of hair, each the size of a large apple, and embedded in the wall were three teeth.

The description of the microscopical appearances is not very clear:—"The tumour is seen to be composed mainly of epithelial elements, which infiltrate extensively the fibrous tissue stroma. Multiple pearl-nests are found in these areas. At other points the epithelial cells are arranged in alveolar and tubular forms, as in carcinoma, with large bands of fibrous tissue surrounding them. A large amount of adipose tissue is also present. The vessels throughout are numerous and engorged with blood, and in places surrounding these are a number of small round cells."

"The tumour is therefore an ovarian dermoid cyst with epitheliomatous and, in some places, carcinomatous infiltrations. It also shows evidence of acute and, in some places, sub-acute inflammatory reaction."

We are uncertain how this tumour should be classified, the presence of the numerous cell-nests renders it highly probable that in part at least it was a squamous-celled carcinoma originating in the "dermoid." But judging by its multilocular nature and the alveolar and tubular arrangement of the epithelial cells in part of the growth, it is not improbable that the "dermoid" was combined with a cysto-carcinoma of another part of the ovary.

(9) Lindsay Peters (*Johns Hopkins Hospital Bulletin*, 1900, vol. xi, page 78). The patient was a woman, 46 years of age, the mother of ten children. For 14 years before her admission to hospital she had suffered from urinary symptoms, sometimes incontinence of urine, sometimes retention, sometimes difficult and painful micturition; for eight years she had been conscious of the presence of a

tumour in the abdomen, but it had not appreciably increased in size until within three months of her admission. The operation was performed by Howard Kelly. The tumour was removed with great difficulty, it was densely adherent to the sigmoid, rectum and pelvic walls, and on detaching it from the rectum and posterior vaginal wall a carcinomatous mass was encountered which could not be completely removed. Nodules of growth were seen on the surface of the bladder and on the peritoneum. The patient recovered from the operation, and at the time the case was recorded was still alive.

The cyst measured 13 cm. in diameter, its contents are described as "dermoid." Its walls varied from 1 to 4 mm. in thickness, and in places were raised up into permanent ridges to which were attached wisps of long fair hair. At one spot was a rough excrescence 5 cm. in diameter, parts of which were very friable.

Microscopic description showed that the cyst was "dermoid" in nature, the wall being lined by squamous epithelium beneath which were a few hair follicles. The raised areas were continuous with underlying hæmorrhagic areas in the cyst wall, and were composed of cells of varying size, many of which were giant cells. Sections through the rough excrescence showed it to be made up of a mass of squamous cells containing cell nests. These cells extended through the entire thickness of the cyst wall, and in one place a transition from the lining epithelium into the carcinomatous tissue was seen.

(10). Gorisoutoff (*Centralbl. für Gynäkol.*, No. 45, 1907). The patient was a virgin, aged 45, in whom the menopause had occurred two years previously. For two months she had noticed in the hypogastrium a swelling the size of a fist, which caused dysuria and constipation. At operation, the swelling proved to be an intraligamentary tumour of the left ovary and was successfully removed. The tumour was a "dermoid," and contained "a cancerous area with flat cells derived from the stratified epithelium." The patient recovered from the operation, but two months later infiltration was detected in the left half of the pelvis, and the patient died within six months. No necropsy is reported.

(11) E. Shaw (*Proc. Roy. Soc. Med.*, vol. iii, No. 6, p. 143, Obstet. Section). The patient was 47 years of age and had never been pregnant; the menopause had occurred three months previously. A tumour in the region of the right iliac fossa was known to have existed for two years, but the patient remained in her usual health until two months before she came under observation, when she commenced to suffer from pain in the right side of the abdomen and difficulty in micturition. At operation a cystic tumour of the left ovary, very adherent to intestine and omentum, was discovered. In attempting to remove it the wall ruptured, and a large amount of

purulent and sebaceous material escaped, but in spite of this the patient made a good recovery from the operation.

Description of the tumour removed. "In its empty and collapsed condition the cyst measures about 4 inches in diameter. It is rounded in shape; the wall is thin above, thick below, and apparently fibrous in structure; adhesions are present on the surface. A circular mass of ragged, solid growth projected from the external surface of the lower part of the cyst; the growth is pale, yellowish-white in colour, and is apparently malignant in character. A section through the growth and cyst wall shows the growth passing through to the inner aspect of the cyst where it forms a flat, nodular mass about two inches in diameter. The cyst is partly divided into two portions by a thick band of tissue; the base of the latter is covered by a skin surface, from which are seen projecting a number of hairs almost white in colour; the inner surface of the cyst over a large area is rough like corrugated skin. Several masses of light brown hair, bound together by sebaceous material, lay loose in the cavity of the cyst.

"Microscopical examination of the growth shows typical squamous-celled carcinoma with many 'cell nests,' and much cornication of the epithelium. A section of the cyst wall and nodular mass seen internally shows the same type of growth, which is also continuous with the external tumour."

(12) Targett (*Proc. Roy. Soc. Med.*, vol. iii, No. 6, p. 145, Obstet. Sect.). The patient, aged 45, came under observation on account of a pelvic tumour causing difficulty in micturition. The uterus was displaced upwards and forwards by a rounded tumour which filled Douglas's pouch and extended upwards half-way to the umbilicus. At operation the tumour was found to be a "dermoid" cyst of the left ovary, densely adherent to the back of the uterus, the rectum and pelvic wall. The operation was very difficult, and panhysterectomy was necessary to control the bleeding and to reach the deep adhesions. The wall of the cyst was much thickened at one part by a mass of new growth with the characteristic structure of a squamous-celled epithelioma and which contained cell-nests. The patient made a good recovery, and remained in fair health for some months; eventually recurrence took place in the pelvic cavity, and she died thirteen months after the operation, having suffered severe pain from invasion of the nerve cords of the sacral plexus, and from incontinence of urine and fæces.

(13) Cullingworth, reported by Fairbairn (*St. Thomas's Hospital Reports*, New Series, vol. xxviii, 1899, p. 270). The patient was a widow, aged 66, the mother of four children; the menopause had occurred 9 years previous to admission into hospital. A swelling had been noticed in the lower part of the abdomen for 6 weeks, attention having been called to it by pain in the side on walking;

there had been no hæmorrhage or discharge, and no trouble with the bowels or on micturition, but she had lost flesh recently. At operation (which proved to be difficult owing to extensive adhesions) the tumour was found to be the right ovary, cystic and enlarged to the size of a cocoa-nut. It was composed of two distinct portions—a lower and larger portion cystic, rounded and smooth, and a smaller upper portion solid, rough, friable and adherent to the anterior abdominal wall, omentum and bladder. The wall of the bladder was extensively infiltrated by growth, but the mucous membrane was not invaded. The tumour and part of the bladder were removed; no enlarged lymphatic glands were detected, and the left ovary appeared normal. The patient survived for a few days only.

"*Examination of parts removed.* The tumour proved to be a 'dermoid' cyst of the right ovary, and the solid and adherent portion to be a malignant growth arising in the cyst wall. The whole measured $3 \times 2\frac{1}{2}$ inches. On opening the cyst it contained hair and yellow, oily, sebaceous material, which solidified on cooling. The malignant portion measured $1\frac{1}{2}$ inches in diameter, and was about $\frac{3}{4}$ inch thick; its external surface was rough and friable; on section it was hard and fibrous."

"*Microscopic Report*: Squamous-celled carcinoma arising from the wall of a dermoid cyst." A piece of the growth excised from the bladder was also examined and the report returned was "squamous-celled carcinoma infiltrating wall of bladder." The specimen is preserved in the St. Thomas's Hospital Museum. The post mortem examination showed that death was due to obstruction of the small intestine by adhesions. No further malignant disease was discovered in the abdomen.

(14) Dor and Bérard (*Klokow Inaug. Diss.*, Königsberg, 1901) briefly record a case in which the left ovary was cystic. On examination it proved to be a "dermoid" in which pavement epithelial infiltration could be traced from the squamous-celled lining of the cyst-wall.

(15) Gebhard in his "Textbook of the Anatomy of the Female Sexual Organs," 1899, p. 101, mentions three cases. We have rejected the first as it was a solid not a cystic teratoma; we also reject the third, as the author is uncertain whether the carcinoma originated from "dermoid" elements.

The second may, however, be accepted. It is described as a dermoid ovarian cyst showing infiltration with pavement epithelium, in which many cell-nests were present. The tumour was adherent to the rectum but the rectal mucous membrane was normal.

(16) Paltauf's case reported by Polzl (*Centralblatt f. Allegm. Path. und Path. Anat.*, Jena, 1904, No. 14). The patient was aged 42, had never been pregnant and always menstruated regularly. She continued in her usual health until two months before she came

under observation, when she commenced to suffer from irregular attacks of pain and noticed a swelling in the situation of the right iliac fossa. The operation was performed by Dr. Ullmann: the tumour proved to be the right ovary in a cystic condition, and was removed with difficulty owing to the presence of many adhesions. In spite of this the patient made a good recovery. She remained well for the next four months when the attacks of pain recurred in the region of the liver. She eventually died two months later. No post mortem examination was made.

Description of the tumour. The cyst is rounded in shape, has a diameter of 15 cm., and has the Fallopian tube attached to its upper pole. The outer surface is rendered rough by the presence of numerous adhesions, and also by many firm protuberances varying in size from a pea to that of a cherry.

On section the tumour is seen to consist of four cystic spaces which communicate one with another. The cyst contains a quantity of fair hairs, some of which are attached to the lining wall.

The cyst wall is thickened at its upper pole by the presence of a new growth and measures 1½ cm.

Microscopic examination. The wall of the cyst is for the most part composed of fibrous tissue within which, however, some remains of the ovarian stroma can be detected. Most of the inner surface is covered by granulation tissue in which are many giant cells, but a crested projection about 2 cm. in size is covered by squamous epithelium and shows the histological appearances of skin and hairs, sebaceous and sweat glands. A section through the thick upper pole of the cyst shows the fibrous tissue wall extensively infiltrated by masses of new growth, composed chiefly of polygonal cells with large vesicular nuclei and containing many cell-nests. The surrounding connective tissue exhibits small-celled infiltration.

To the cases collected above we are able to add four hitherto unpublished.

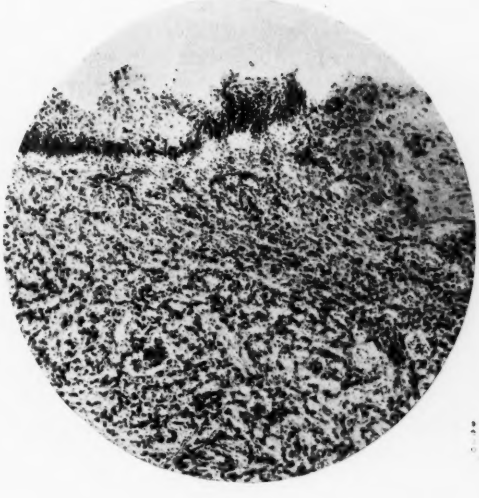
Case I. M.T. was admitted to the Royal Waterloo Road Hospital in March 1905, under the care of Dr. Gow, to whom we are indebted for permission to publish the case.

The patient was a woman, aged 40, who had never been pregnant. Menstruation was regular and painless. She continued in her usual health until a fortnight previous to admission when she first noticed pain in the region of the left iliac fossa.

The abdomen was distended by a globular swelling situated in the hypogastric and umbilical regions. The swelling was elastic, movable and not tender; it reached to an inch and a half above the level of the umbilicus.

The operation was performed by Dr. Gow. He found the tumour to be the left ovary. The right ovary appeared natural. The patient

Case I.



Case II.

made a good recovery, and left the hospital. Sixteen weeks later she died. Before death nodular masses could be felt within the abdomen in the situation of the liver. No post mortem examination was performed.

Description of the tumour. The turour is the size of a fœtal head. Its outer surface is smooth except at one spot where a number of adhesions are seen, and to it is attached the Fimbria Ovarica of the Fallopian tube.

On section the tumour contains a quantity of hair embedded in solidified fatty and sebaceous material. Incorporated in the wall at one spot is a small plate of bone containing three teeth, at a short distance from this is an irregular flattened patch two and a half inches in diameter projecting half an inch above the general level of the cyst wall. The surface of this patch is red in colour and is raised up into a number of small papillary projections. Portions of this patch were removed for microscopical examination.

Microscopic examination. The section is composed of irregular masses and columns of squamous epithelial cells separated from one another and supported by a connective-tissue stroma. The stroma is invaded, and in many places destroyed and replaced by the carcinoma cells. The cells are of variable size, some very large, others small and tightly packed together. The nuclei are vesicular and deeply staining, some are enormous and many contain karyokinetic figures. There are many cell-nests scattered through the section. The wall of the cyst is invaded deeply by the cancerous growth, but is not completely penetrated.

Sections from the embryonal area adjacent to the growth show the structure of skin containing sebaceous glands and hair follicles, masses of unstriped muscle, and nerve tissue. In other parts the cyst wall is composed of dense fibrous tissue, which has undergone hyaline change, and is lined by a layer of granulation tissue in which are embedded hairs with giant cells grouped around them.

Case 2. J.W., aged 60, was admitted to the Royal Free Hospital in June 1907 (Reg. No. 945), under the care of Mr. Legg, and we desire to express our thanks for his kindness in allowing us to publish the case, and for the trouble which he has taken to help us in our investigation. The patient was the mother of two children; menstruation had ceased 10 years previous to admission. She continued in her usual health until March 1907; since then she had suffered from pain in the region of the right iliac fossa and down the right leg. At this time a fixed mass was discovered in the abdomen. Laparotomy was performed by Mr. Legg three months later and a tumour was found adherent, especially upon its right side, to the intestine. The largest part of the growth consisted of the cystic left ovary. In the situation of the right ovary was a firm

mass. The operation was difficult, and during the manipulations necessary to remove the mass on the right side a quantity of cheesy material escaped. The growth was found to involve the posterior aspect of the uterus and a portion of the right ureter. Both ovaries were removed together with the uterus and part of the right ureter. The patient made an uneventful recovery.

The subsequent history of the patient is unknown.

Pathological Report.

(*a*) The *left ovary* is represented by a dermoid cyst situated behind and adherent to the posterior surface of the uterus. The cyst is irregularly spherical, 12 cm. in its greatest diameter. At one part of the cyst is a dense white lobulated mass of carcinomatous growth measuring 8 cm. transversely and extending across to and involving the right ovary.

The outer surface of the cyst is smooth and white. The wall measures 3 cm. at its thickest part and is apparently fibrous. The cyst cavity is partially divided into two by a thick raised fibrous ridge. In the portion of the cyst wall adherent to the ovary is a soft papilliferous growth. The cyst contents consist of thick yellow sebaceous matter in which are embedded hairs and masses of inspissated material. No teeth or bone are present.

The growth appears to have originated from the lining wall of the "dermoid." It forms a somewhat lobular flattened spherical mass on the posterior aspect of the uterus to which it is firmly attached. Both broad ligaments are extensively infiltrated. Below, the mass extends to the level of the line of amputation of the uterus at the cervix.

(*b*) The *right ovary* is considerably enlarged and firm. It is adherent to the growth and invaded by it.

(*c*) *Uterus.* The cavity measures 5 cm.; both the body and cervix appear healthy.

Microscopic Report.

(i) *Section through wall of the "dermoid."* The section shows a squamous-celled epithelial lining. At one spot the squamous cells can be seen to invade the underlying connective tissue. These cells vary in size and possess large nuclei. The deeper structures are extensively infiltrated with irregular masses of squamous epithelium within which are numerous cell nests. The cells of the growth in its deeper parts are necrotic.

(ii) *Section through the right ovary.* The section shows the ovarian stroma containing several blood spaces and numerous old corpora lutea. The stroma is densely infiltrated by masses of squamous-celled epithelium containing numerous cell-nests.

(iii) *Section through the mass of growth* shows irregular masses of squamous-celled epithelium; the cells in the centre of the growth are very necrotic.

Case 3. *St. Bartholomew's Hospital Museum Specimen.* The clinical history of the case is unfortunately unknown. The specimen was discovered by Dr. Williamson amongst a number of morbid growths which had been set aside for investigation at some future time, and the label originally attached had disappeared.

The tumour is rounded in shape and measures 17 inches in circumference. The external surface is smooth and of a brown colour. On section it contains a large quantity of hair and of sebaceous matter; on removing its contents a fleshy mass, the size of a man's fist, is found attached to the wall and projecting into its interior. The mass is irregular and nodular, attached to the cyst wall by a broad bone and of stony hardness. A portion of this mass, with the cyst wall attached was removed for microscopic examination.

Microscopic Report. The section shows masses of squamous epithelial cells embedded in a connective tissue stroma. The cells are irregular in both size and shape; some of these possess more than one nucleus, and many of the nuclei are of very large size. The epithelial cells have invaded the stroma in an irregular fashion and have in part destroyed and replaced it. Cell nests are seen scattered through the section, but they are few in number and degenerate. The wall of the cyst is composed of fibrous tissue, and in places is deeply invaded by the epithelial cells.

Case 4. This case occurred in the practice of Dr. Griffith, and we are indebted to him for his kindness in allowing us to have access to the notes and to publish the case.

The patient, a lady, aged 47, had never been pregnant.

The menopause occurred 10 months before she came under observation. She had been in her usual health until two years previously, when she complained of frequency of micturition, and occasionally had difficulty in passing urine. She had never suffered from hæmaturia. When Dr. Griffith saw her he found an elastic movable mass in the lower part of the abdomen, extending from the pelvic brim to the level of the umbilicus.

Laparotomy was performed, and a cystic tumour discovered, the size of a fœtal head. The cyst was the right ovary, its wall was pale in colour and was free from adhesions except in the region of the bladder, where it was densely adherent. The tumour was removed and the infiltrated tissues dissected away from the bladder wall.

The patient made a good recovery from the operation, but eleven months later she died. Before death several irregular-shaped masses were felt in the abdomen. No post mortem examination was made.

Pathological Examination. The specimen is globular in shape and the size of a fœtal head. Its wall is white in colour, and its surface is free from adhesions, but at one spot is a cylindrical mass of growth which was adherent to the bladder. On section the wall of the cyst contains several hard nodules. The cyst contents are "dermoid" in nature, consisting of hair and sebaceous material.

Microscopic Section. The cyst wall is composed of fibrous connective tissue which is deeply infiltrated by irregular masses of squamous epithelial cells. These cells vary both in size and shape. In some of them the nuclei are large, and in many vesicular and vary in intensity of staining. No cell nests are seen.

We have thought it desirable to record these four cases and to collect such others as we could find scattered through the literature in order to call attention to the fact that ovarian "dermoids," in the vast majority of cases innocent tumours, may occasionally be the site of origin of a malignant growth.

Addendum.

Since the above was written our attention has been drawn to a case recorded by Drs. Hellier and Stewart in the *Transactions of the North of England Obstetrical and Gynæcological Society*, May 1911.

This case is of considerable importance, for it suggests the possibility of the occurrence of secondary metastatic growths in a cystic teratoma.

On March 18 1908 Dr. Hellier performed vaginal hysterectomy on a patient, aged 44, for the removal of "a large epitheliomatous growth of the cervix uteri of the cauliflower type." The report does not mention whether the growth was subjected to microscopic examination. The patient made a good recovery, and was discharged on April 6 1908. She remained in good health until the end of August 1910, when she noticed pain in the hypogastric region and swelling of the abdomen. During the last three weeks of October she suffered from frequent vomiting. An abdominal tumour was discovered, and on November 9 abdominal section was performed. A cystic swelling, measuring 7½ inches in its longest diameter, occupied the situation of the left ovary. At the time of the operation there was general peritonitis, and many peritoneal loculi containing offensive fluid were opened into in the process of removal of the tumour. The patient died on the following day. The cyst was unilocular, and its walls varied in thickness from $^1/_{16}$th to 1½ ins. At one spot on the cyst wall was an area covered by skin, from which a large nipple-like process projected into the cavity; a number of hairs grew from this surface. The cyst contents consisted of loose hair and sebaceous material. The wall of the cyst was for the most

part white in colour, in places necrotic, and its inner surface was friable and infiltrated with blood.

On microscopic examination the embryonal rudiment was found to contain squamous epithelium, hair, sebaceous and sweat glands, nerve tissues, unstriped muscle, thyroid gland, and intestinal wall. The remainder of the wall consisted mainly of squamous-celled carcinoma, containing many cell nests. The authors discuss the question as to whether the squamous-celled carcinoma originated in the squamous epithelium of the teratoma, or whether it should be regarded as secondary to the growth in the cervix for which hysterectomy was performed $2\frac{1}{2}$ years before.

Their conclusions are as follows:—"While it is extremely improbable that this point can ever be definitely settled, we believe that the latter explanation is the correct one. It is a significant fact that the nipple-like projection where ectodermic structures are present in the greatest profusion is entirely free from malignant new growth while the more peripheral portions of the cyst are preponderatingly epitheliomatous. While it appears almost certain from the microscopic description that the original cervical growth was a squamous epithelioma it must be admitted that in the recorded cases of carcinomatous degeneration of teratomata this appears to be the type of new growth which is most commonly found." If the deductions drawn by the authors be correct and metastatic deposits from a squamous-celled growth, primary in some other part of the body, may be found in a cystic teratoma, a fourth group must be added to those we have described above.

A Multilocular Ovarian Cyst containing Teratomatous, Sarcomatous and Papillomatous Elements.

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and Clara Eglington, M.B., B.S. (Lond.),
Assistant Clinical Pathologist, Leeds General Infirmary.

The case herein recorded belongs to that somewhat anomalous group known as the malignant ovarian teratomata, examples of which are so rarely met with that when they do occur, they ought to be carefully investigated and placed upon record. It is only by such means that we can hope to arrive ultimately at a proper conception of the possibilities of these growths and so to evolve a better and more complete classification than any of those at present in vogue.

Clinical History. Mrs. F., aged 40, was admitted to the Leeds General Infirmary on June 6th, 1911, under Mr. Thompson. She said she had been ill for at least 2 years but had no special complaint until 6 months ago when her body began to swell, while she had gradually been losing weight. Menstruation had been regular throughout. She was married and had had two pregnancies, one child aged 13 years, and one miscarriage 16 years ago.

On June 8th 1911, Mr. Thompson performed laparotomy, and found a large semicystic tumour apparently originating in the right ovary and implicating the uterus and left ovary. After numerous adhesions to the rectum and omentum had been with difficulty broken down, the whole mass, including the uterus, was removed.

The patient left the hospital two weeks later, but died at home on July 23rd with symptoms pointing to peritoneal dissemination.

Macroscopic Examination. The tumour received from the operating theatre consists of a large oval mass measuring about 7 inches in its longest diameter. Adherent to its upper aspect is a considerable portion of omentum in which is situated a cauliflower-like growth about the size of a hen's egg. On the anterior aspect of the main tumour the uterus can clearly be distinguished, both from its shape and from the presence of the external os at its lower extremity, while the left Fallopian tube and ostium are also seen stretched over the tumour. The left ovary appears to be normal. The right tube cannot be distinguished. The rest of the tumour lies behind the uterus and is essentially cystic in character.

On section, the uterus contains several intramural fibroids, varying in size from a split pea to a hazel nut. The cavity of both body and cervix appears to be normal. The rest of the tumour presents the characters of a multilocular cyst of which the individual

Plate I. Section through the ovarian tumour and uterus. The multilocular character of the cyst is shown, together with the sarcomatous solid portions, the intracystic papillomata, and the teratoma with its embryonic rudiment. Adherent to the upper surface of the tumour is a portion of great omentum from which is growing a large secondary papillomatous mass

loculi vary greatly in size and in the thickness of their walls, while here and there portions of solid growth intervene. The largest portion of solid growth, which lies immediately behind the fundus uteri, has undergone central softening with formation of a large irregular cavity communicating freely with some of the loculi of the cyst. The remaining solid portions, none of which are cavitated, occur as isolated plaques and nodules of varying sizes within the walls and septa of the loculi. The latter, with two notable exceptions, are quite smooth walled within, and are filled with glairy fluid which varies in colour and consistency. The appearances in fact are similar to those usually found in ordinary multilocular ovarian cystomata. Into one of the superficial loculi on the posterior aspect of the tumour there projects a cauliflower-like mass of growth, corresponding in size and shape very nearly to a large raspberry, and presenting precisely the same naked eye characters as the large cauliflower-like mass in the omentum. The latter also has been intracystic originally, but the cyst has ruptured and now forms an opaque white collar-like membrane surrounding the attachment of the growth. A second small cyst in close proximity to that just described is almost completely filled by a similar papillomatous mass. Another of the superficial cysts situated on the inferior aspect of the tumour close behind the cervix uteri is clearly a dermoid, being filled with fatty material and lined by skin from which project many short yellow hairs. The usual nipple-like process, the embryonic rudiment or anlage, so characteristic of ovarian teratomata, is present on the inner wall. It is very small in size, and is associated with a special tuft of hair which is much coarser and somewhat longer than the rest. The hair otherwise appears to be uniformly distributed over almost the whole inner aspect of the cyst wall (see histological examination).

Histological Examination. Numerous portions of the tumour have been examined microscopically, including the teratomatous anlage, the papillomatous mass in the great omentum, and certain of the solid portions of the growth.

(i) The loculi generally are lined by a single layer of epithelium partly columnar, partly cubical and flattened.

(ii) The anlage or nipple-like process of the teratoma was examined in serial section. The structures herein contained may be classified as follows: —

(*a*) Of epiblastic origin:—

Squamous epithelium.
Hair.
Sebaceous glands.
Sweat glands.
Salivary glands.
Gliomatous tissue.

(*b*) Of mesoblastic origin:—
Hyaline cartilage.
Unstriped muscle.
Lymphoid tissue, etc.
(*c*) Of hypoblastic origin:—
Columnar epithelium (? respiratory).

The nipple-like process is composed for the most part of numerous large sebaceous glands separated by a rather scanty fibrous stroma; a few hair follicles presenting the usual characters are also present. One or two collections of glandular acini lined by a single layer of cubical epithelium are present. These closely resemble normal sweat glands but no duct-like structures communicating with the surface are seen. Among the more deeply situated of these epiblastic structures there is a mass of salivary gland substance. It is of the demilune gland type corresponding to the human sublingual gland, and shews very well the clear mucus secreting cells at the centre, and the darkly stained peripherally situated demilunes of Gianuzzi.

Two peculiar structures differing from any normal histological tissue call for special attention. At one point close underneath the surface epithelium of the anlage there is a tumour-like mass of epithelial cells apparently originating in connection with a sebaceous gland, and somewhat resembling the epithelial lining of the spaces into which the glands open. Here, however, the degree of cellular proliferation is altogether excessive. The cells are spindle-shaped and have a somewhat whorled arrangement, whilst those at the periphery lie with their long axes more or less at right angles to the surface. In the centre there is a small portion of unaltered sebaceous gland with a duct-like structure on one side, and on the other a single elongated glandular acinus resembling salivary gland. The other peculiar structure in the anlage is in the form of an alveolar space lined by several multinucleated plasmodial masses resembling tuberculous giant cells which, however, contain no tubercle bacilli. Both of these appearances will be discussed later.

The greater part of the anlage is covered by a thin layer of stratified squamous epithelium in which all the strata are present. A depression on one side of the process is lined, however, by ciliated columnar epithelium which, at the deepest part, is in immediate relation to a small mass of lymphoid tissue, clearly the analogue of the tonsil. This interpretation is rendered the more probable by the presence of an epithelial crypt dipping into the lymphoid nodule, and by the fact that in close relationship to the latter on its deep aspect is the mass of salivary gland tissue already described.

The base of the nipple-like process is occupied by an elongated mass of gliomatous tissue in which are seen structures resembling multipolar nerve cells, while between it and the epithelial tissues

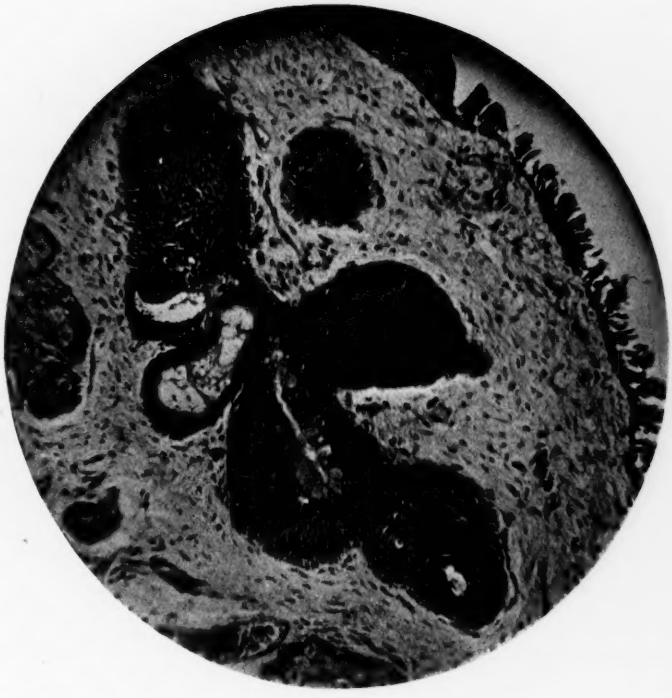


Plate II. Microphotograph of the peculiar embryonic epithelial cell mass described in the text. In the centre there is seen at one place a salivary gland acinus, and at another a small portion of sebaceous gland. On the surface is seen the transition from stratified squamous to ciliated columnar epithelium. (×120.)

above described are several large cystic spaces lined by ciliated cubical epithelium. At each end of the gliomatous mass there are portions of hyaline cartilage lying alongside strands of unstriped muscle fibres, while at one end there is an elongated cavity lined in part by ciliated columnar epithelium. From the histological character of these latter structures as well as their intimate anatomical relationship it appears certain that they are respiratory in nature.

(iii) Several portions of the teratomatous cyst in addition to the anlage have been examined. Only that part of the cyst wall in immediate relation to the latter is skin-lined, and shews the usual epidermic structures; the remaining portion of the cyst shews no epithelial lining whatever, even where hairs are present to the naked eye. In these parts the wall consists of a thin layer of dense fibrous tissue lined internally by a loose connective tissue, among which are numerous multinucleated giant cells of various sizes. This inner layer varies greatly in thickness, and where it is thinnest appears to consist simply of a layer of giant cells. Scattered irregularly throughout it are numerous small and atrophic-looking hairs, clearly distinguishable by the yellow pigment in their interior; no definite hair roots or follicles can be made out.

(iv.) The intracystic cauliflower-like growths as well as the larger mass in the omentum present the usual histological characters of ovarian papillary adenomata. Centrally there is an abundant fibrous stroma, which extends outwards between the glandular acini and forms the central core of the papillomatous processes. The epithelium lining the acini and covering these processes consists of a single layer of cells, for the most part cubical, but sometimes columnar. Much of the epithelium appears to be ciliated. There is no histological evidence of malignancy.

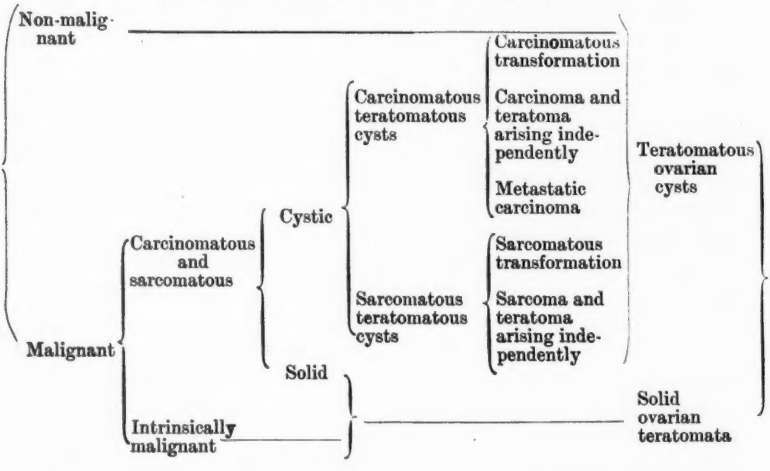
(v) Several portions of solid growth from different parts of the tumour have been examined. Each shews well-marked histological evidence of malignancy, and conforms more or less to the type of mixed cell sarcoma. The cells vary greatly in size and shape; in some sections spindle and oat-shaped cells predominate, while in others the majority are round and have highly irregular, sometimes multiple, nuclei. Mitotic figures occur with considerable frequency. The central cavity of the cyst is separated from the uterine muscle by a broad zone of this sarcomatous tissue, which appears to be infiltrating the wall of the organ from without and not originating therein. The sarcomatous masses shew numerous areas of necrosis and of polymorph infiltration, changes which are most marked round the cavitated portion of the largest solid mass.

(vi) Three of the uterine fibroids which were examined present the usual histological characters.

Commentary. In considering the malignant teratomata of the

ovary, it must be clearly borne in mind that the so-called solid ovarian teratomata form only one variety of this class, and that many teratomatous cysts are also malignant both clinically and histologically, either from carcinomatous or sarcomatous transformation taking place within them, or from association with an independent malignant neoplasm in the same ovary. But whereas the solid teratomata are all malignant clinically, the great bulk of the large-cysted teratomata are benign. The term teratoma is here employed in the sense recommended by Adami,* viz., as a generic term embracing all the varieties of these growths from epidermoid cysts to compound teratomas. We do not propose in this paper to consider ovarian teratomata in general, but only such as exhibit malignant characters, clinical or histological. The following scheme, which has already been published elsewhere, was devised to show the relationship to one another of the various members of this rather complex group of tumours.

CLASSIFICATION SCHEME.—OVARIAN TERATOMATA.



The solid or small cysted teratomata are of rare occurrence. The first cases recorded in England appear to be those of Knowsley Thornton[1] in 1881, two in number, but in only one of which was the diagnosis confirmed by microscopic examination. Two years earlier than this, however, cases had been reported in Germany by Unverricht[2] and Litten.[3] Hicks and Targett,[4] who published two cases in 1905, collected 11 others from the literature, but made no mention of Thornton's cases. Frank,[5] writing two years later, gives a brief résumé of 37 cases, but many of these were only partly solid

* "Principles of Pathology," 1910, vol. 2, p. 852.

and constituted transition forms between this class and the large cysted malignant teratomata. The great majority of the cases occur in childhood or in early adult life. In Hicks and Targett's series the ages at death ranged from 6 to 30, while in the cases collected by Frank the average age was 20 years. Clinically, these tumours are highly malignant. In those cases of Frank's series in which the outcome was known, the mortality rate was 88·8 per cent. Microscopically these growths are characterised by the presence, in most instances, of derivatives of all three germinal layers, but "the tissues attain a far lower degree of differentiation than those found in dermoids" (Frank),* and organs when formed are "at a stage corresponding to the earliest fœtal period." The typical arrangement of structures seen in a compound teratoma is lacking, and tissues and organs are hopelessly mixed up.

In the above scheme, the solid teratomata have been subdivided into those which are intrinsically malignant and those which are carcinomatous or sarcomatous. In the former, both primary and secondary growths are teratomatous only, while in the latter carcinomatous and sarcomatous elements are present in addition, and in many instances form the exclusive constituents of the secondary deposits. This distinction is carefully pointed out by Hicks and Targett in whose first case, although rapid recurrence and infection of the retroperitoneal lymph glands took place, none of the usual histological criteria of malignancy were present, either in the primary or secondary growths.

The large cysted teratomata or ovarian dermoids are in the great majority of cases benign, but every now and then a malignant case crops up, and it is with these especially that we wish to deal at present. Theoretically three possibilities have to be considered:—

1. Malignant transformation, carcinomatous or sarcomatous, of some one or other of the various structures composing the teratoma.
2. The independent origin in the same ovary of a teratomatous cyst and a malignant neoplasm.
3. The occurrence of metastatic deposits of new growth in an ovary already the seat of a teratoma.

Actually, almost all the recorded cases belong to the first category, and the rarity of examples of the other two classes is scarcely a thing to be surprised at. In 1898 Clark[6] was able to collect 8 undoubted examples of carcinomatous transformation occurring in a teratomatous ovarian cyst as well as 2 cases in which the precise origin of the carcinoma was obscure. In 9 of the cases the epithelial new growth was squamous in type and originated from the epidermal lining of the cyst; in the tenth (Yamagiva's[7] first case) it was a

* The term dermoid is here employed in the sense of large cysted teratoma.

glandular cancer, and was supposed to have its origin in the glands of the nipple-like process. In striking contrast to the solid ovarian teratomata the average age of these 10 cases was 41·4 years.

We have gone carefully through most of the recent English and American literature dealing with this subject, and can find references to 12 further examples of carcinomatous teratomatous cysts in addition to the one just recorded. Of these no fewer than 8 are squamous epitheliomata (Targett (2),[8] Shaw,[9] Williamson,[10] Oliver,[11] Morrison and Rattray,[12] Grant[13] and Lindsay Peters[14]), and almost certainly developed from the epidermic lining of the cyst.

In a case reported by Norris[15] a small nodule of adenocarcinoma was present on the inner aspect of the cyst, and was supposed to have its origin in the sweat glands of the skin.

Brettauer[16] records a case in which the ovary contained a large cystic teratoma, and apparently quite independent of it, a solid tumour the size of an egg, which, on microscopical examination proved to be adenocarcinoma.

In a case of so-called teratoma strumosum thyroideale ovarii described by Norris,[17] the ovarian tumour was partly cystic and partly solid. The cystic portion was lined on one side by squamous epithelium with hair and sweat glands, while the solid portion was entirely composed of tissue identical with that of normal thyroid. Some areas of the latter showed undoubted evidence of carcinomatous transformation. Norris gives references to 12 other such cases (*i.e.*, teratomas in which the thyroid-like tissue predominates), and expresses an opinion that they are all malignant clinically whether histological proof is forthcoming or not.

Hellier and one of us (M. J. S.)[18] have recently reported a case in which an epitheliomatous teratoma of the ovary was removed from a woman who, 2½ years before, had had hysterectomy performed for a cauliflower growth of the cervix. No transition from normal squamous epithelium to carcinoma could be traced, and it remains an open question whether the malignant neoplasm developed from the teratoma or was secondary to the uterine growth.

The literature relative to sarcomatous teratomatous cysts is even more scanty. F. E. Taylor,[19] writing in 1905, describes two cases and gives references to 15 others, a total of 17 on record up till that time. Of 22 malignant ovarian teratomata collected by Schwertassek[20] in 1894, 11 were carcinomatous, 2 endotheliomatous and 9 sarcomatous. Many of these are clearly examples of solid or small-cysted ovarian teratomata, but one or two of them are of the large cysted variety. The author's own case is one of multilocular ovarian cyst, partly dermoid, in which sarcomatous transformation of the stroma has taken place. Lastly, Amann[21] has noted the occurrence of melanotic sarcoma within an ovarian teratoma, while Pick[22 23]

and others have described cases in which typical chorionepitheliomatous elements were present (see also Teacher* and Hormann†).

The case which we have just recorded differs, chiefly by reason of its complexity, from all the foregoing cases. Here we have to deal with a multilocular ovarian cyst in which not only is one of the loculi teratomatous, but also several of the others contain papilliferous ingrowths. In addition, masses of sarcomatous growth are present at intervals in the walls and septa of the cyst, while growing on the omentum there is a large secondary papillomatous mass. There seems to be little doubt that the sarcoma originated in the stroma of the multilocular cyst, and there is no evidence that it bears any special relationship to the teratomatous portion. Neither is there anything to suggest a uterine origin. Rather the appearances seem to indicate that there was first adhesion of the ovarian cyst to the posterior aspect of the uterus and subsequently sarcomatous invasion of that organ from without. The intracystic papillomatous growths are also quite independent of the teratoma, and are of the type so frequently found in the ovary. Although histologically benign, it is clear that they possess a certain degree of malignancy, since they have given rise to a metastatic mass in the great omentum.

With regard to the embryonal rudiment itself there are only two points which require any special commentary.

1. The occurrence of giant cells in ovarian dermoids has been long recognised (Hildebrandt,‡ Williamson,§ Clark‖), and in each instance they have been described as occurring in close relationship to hairs, usually desquamated, which were embedded in the granulation tissue lining portions of the cyst. They are therefore regarded by Williamson as irritation giant cells, corresponding in nature and function to those which surround any foreign body which has been for some time embedded in the living tissues. In the present instance, almost the whole of the interior of the cyst appears to have hairs growing from it, but on microscopic examination definite hair-roots and follicles are only found in and around the teratomatous anlage. While we believe that Williamson's explanation is quite a feasible one, it seems to us conceivable that the whole cyst may originally have been skin-lined, and that the hairs, the most resistant of the epidermic structures, are all that now remain *in situ*. Why a small cavity containing similar giant cells to those lining the cyst should occur in the centre of the embryonal rudiment we are unable to say. The appearances are not unlike those figured by

* Teacher, "Journ. Obst. and Gyn.," July and August, 1903.

† Hormann, "Monattschrift f. Geb. w. Gyn." Bd. xxix, S. 207.

‡ Ziegler's "Beitrag. z. path. Anat." 1890. B. vii, p. 169.

§ "Trans. Obst. Soc.," London. 1905. Vol. 46, p. 299.

‖ Loc. cit. No. 6.

Shennan and Wilkie* in the case of developing gas cysts of the small intestine, and which are regarded by them as chronic inflammatory in nature.

2. An interesting and unusual feature of this case is the peculiar epithelial cell mass which is present in close relationship to one of the sebaceous glands. The histological appearances at first sight suggested rodent ulcer, a form of malignant transformation not yet recorded in teratomata, but on further consideration it is by no means clear whether this cellular accumulation is to be regarded as an undifferentiated epithelial cell-mass, possibly going on to the formation of more highly specialised tissues, or a tumour-like overgrowth of a structure already present. The entire absence of cellular reaction on the part of the surrounding connective tissue, or of any well marked infiltrative tendency is certainly against the idea of new growth, while the fact that two anatomically different structures, one resembling sebaceous gland, the other salivary gland are present in the centre, is strongly in favour of the former view.

We are indebted to Mr. Walter Thompson for permission to use this case.

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* "Journ. of Path.," vol. 14, p. 259.

A Case of Malignant Cyst Adenoma of the Cervix Uteri.

A UNIQUE SPECIMEN.*

By Gordon W. Fitz-Gerald, M.D.
Obstetrician and Gynæcologist to the Crumpsall Infirmary.

The specimen was removed by the abdominal route on January 20 1911, from a patient of 60, who was sent to me by Dr. A. C. Turner, of Levenshulme.

She was first seen on January 5 1911, when the history she gave was that she had been pregnant thirteen times, the last, a full term pregnancy, being 16 years ago. The menopause had been gone through at the age of 48, and she had been free of discharge of any kind until eighteen months ago, at which time she had a smart vaginal hæmorrhage. From then she had a slight "show" each week, and six weeks before being seen had started having frequent attacks of copious flooding, which on two occasions her medical man could only control by plugging the vagina.

She complained of no pain with, or frequency of, micturition, and, though there was some worrying irritability of the bowel, defæcation had on no occasion been accompanied by any pain.

She was a very fat woman, and showed by her marked anæmia, evidence of the losses to which she had been subjected.

The operation was rendered a somewhat tedious one by the numerous adhesions found, more particularly with the lower bowel, and by the innumerable number of small vessels that needed attention after the mass was removed. Just above the level of the posterior vaginal fornix, the tumour had involved the tissues between the posterior vaginal wall and rectum, and invaded the anterior rectal wall.

She never rallied after the operation and died on the morning of the third day.

The following report, kindly furnished by Professor Delépine, to whom I wish to express my indebtedness for his exhaustive examination of the specimen and for the illustrations, provides an excellent detailed pathological description of the tumour:—

* Case reported before the North of England Obstetrical and Gynæcological Society, April, 1911.

Report on the Specimen received from Dr. Gordon Fitz-Gerald on January 21 1911.

This specimen was removed by operation on Jan. 20 1911. It consists of the body of the uterus, which is slightly enlarged, but not much altered in appearance, and of the cervix which is very considerably enlarged and soft. On making an antero-posterior section in the middle line it is found that the body of the uterus and its cavity have retained their normal relations. In the lower part of the organ the uterine walls are distinctly altered. The cavity is slightly dilated. The canal of the cervix is clearly continuous with the cavity of the body, and is distended with globular masses composed of thick mucus surrounded by very thin transparent walls. The whole substance of the cervix is replaced by cysts distended with mucus and having very thin walls. The outer part of the cervix shows evidence of having been adherent to the surrounding tissues. The os externum is much enlarged and funnel-shaped, the lips are very much thickened, nodulated and eroded. Thick mucus, some of which is blood-stained, escapes from the os. Although the appearance of the part corresponding to the cervix is considerably altered, it is possible to recognize clearly the relations of the canal to the walls. The canal is almost exactly in the axis of the mass which consists of the enormously-thickened walls of the cervix. A loculated gelatinous transparent material has replaced the normal dense tissue of the cervix with the exception of a very thin outer layer of fibrous-looking tissue which is nodulated at places owing to the projection of some of the external cysts. At one place, in a region which was probably slightly above the posterior fornix, the mucous contents of some of these cysts have escaped into the tissues intervening between the vagina and the rectum. The dimensions of the parts are as follows:—

I. Part corresponding to the body of the uterus:
   (*a*) Length, $1\frac{3}{4}$ inches or possibly less ($1\frac{1}{2}$ inch), that is, up to the os internum.
   (*b*) Thickness of anterior walls, $^{9}/_{16}$ inch.
   (*c*) Thickness of posterior walls, $^{10}/_{16}$ inch.
   Total antero-posterior diameter of the uterus in its thickest part, $1^{7}/_{16}$ inches.

II. Part corresponding to the cervix:
   (*a*) Total length, $3\frac{3}{4}$ inches.
   (*b*) Length of cervical canal, $2\frac{1}{2}$ inches.
   (*c*) Antero-posterior diameter, 3 inches.

Except for the fact that the mass corresponding to the cervix is almost entirely composed of very clear jelly-like mucus or colloid matter contained in cysts with extremely thin walls, the general appearances are similar to those found in certain mucous polypi of

the uterus and cervix. In fact the cavity of the cervix is partly filled up with such polypi. The tumour differs, however, from an ordinary mucous polypus owing to the fact that the whole substance of the cervix is implicated, and that the rate of growth appears to have been uniform in every direction, so that it might almost be said that the cervix is in a state of hypertrophy due to the increase of the glandular tissue and accumulation of the mucus normally secreted by these glands (in fact a condition suggesting exaggeration of the state giving rise to the ovula Nabothi), but there is clearly destruction of the intervening tissue (muscular and fibrous) and a tendency to invasion of surrounding structures. With regard to the tissue at the back of the vagina, this invasion cannot be clearly demonstrated in the specimen, but a careful examination of the uterus reveals the fact that the mucous membrane of the uterine cavity is the seat of small cysts similar to those found in the substance of the cervix, and that this change extends nearly as high as the middle of the cavity. The muscular wall of the uterus is involved in same way in the lower third of the organ. With regard to the structure of the tumour of the cervix, it has all the characters of a cystadenoma, but among the distended glands forming the cysts there are some in which the lining epithelium is in a state of active proliferation, and some of these glands are producing offshoots which are invading the surrounding tissues; it is therefore clear that the tumour has, *generally speaking*, the structure of a cystic adenomatous polypus, such as usually grow from the mucous membrane of the cervix, and sometimes from the body of the uterus (mucous-polypus, so-called), but in addition to the glandular cysts in which the epithelium is more or less atrophied or destroyed, there are tubes and acini which are not distended to the same extent, or not distended at all, in which the epithelium is in a state of active proliferation, and which are sending offshoots beyond their physiological area. It is interesting to note that in the cervical tumour the most actively growing glands are found in the neighbourhood of the canal near the junction of the cervix to the body of the uterus. The largest cysts are at the periphery of the mass. In the walls of the uterus beyond the area of invasion there are many small irregular translucent patches which appear to be due to an accumulation of mucous or colloid matter. Some of these patches are clearly in the neighbourhood of blood-vessels. Some of them are the seat of hæmorrhages. Hæmorrhages seem to have resulted from the rupture of smaller vessels in the midst of the tissues infiltrated with mucus both in the cervix and in the invaded part of the body. The walls of many of the larger vessels are in a state of hyaline degeneration.

The tumour therefore is not a simple adenoma, and must be considered a *malignant cystic tumour*, or, to use another nomenclature, an adeno-carcinoma, belonging to the type known as mucus carcinoma.

I have seen only two cystadenomatous tumours out of the very large number of tumours of the cervix uteri which I have examined in the course of 29 years presenting the same invading characters, but in neither had the cervix been so completely affected.

I have seen the stomach walls uniformly invaded in the same way by primary colloid or mucous carcinomata, and the appearances of the thickened stomach walls were very similar to those of the cervix in this case.

The only records which I am acquainted with of tumours that had in all probability the same structure and which were possibly as extensive, are quoted in Pozzi's *Treatise on Gynæcology*, viz.:—

Spiegelberg—two cases of sarcoma colli hydropicum papillare (1878 and 1879).

G. Thomas—case of cluster fibro-adenoma (1880).

Sänger's case, quoted by Winckler (1883).

Pernice's case, described as a strio-cellular myosarcoma (1888).

Munde's case, described as a myxo-adenoma (1889).

Pfannenstiel's case of cluster sarcoma; with references to 11 other cases (1891).

From the account given of the character of these tumours I believe that many of them were of the same kind as the one upon which I now report, notwithstanding the fact that observers have, as a rule, described these tumours as sarcomata. They appear to have generally been malignant.

SHERIDAN DELÉPINE.

The diagram shows roughly the arrangement of parts and extent of the tumours (the transparent mucus is represented black). The photograph of a section of the uterus and cervix gives a fair idea of the general appearances. In the photograph of a thin incomplete section of the body of the uterus the invasion of the organ by cysts is made evident. Two photographs of microscopical sections seen under a low power (×24) show the resemblance of structures of the uterine part and of the cervical part of the tumour.

Reference to the cases mentioned by Prof. Délepine, drawings of which may be seen in Pozzi's *Treatise on Gynæcology*, shows these to be of entirely different appearance to this tumour, though they are probably of the same nature. The growth in these has taken place by the formation of polypoid grape-like masses, and there was no marked involvement of the cervical walls, the uterus or the surroundings.

In the *Ann. de Gyn. et d'Obst.*, April 1908, is a consideration by Drs. H. Hartmann and P. Lecéne, of the subject of diffuse adenoma of the cervix uteri and its relation to uterine cancer. In the case there recorded the tumour was cauliflower in character, and the history was strongly suggestive of malignancy; but on examination

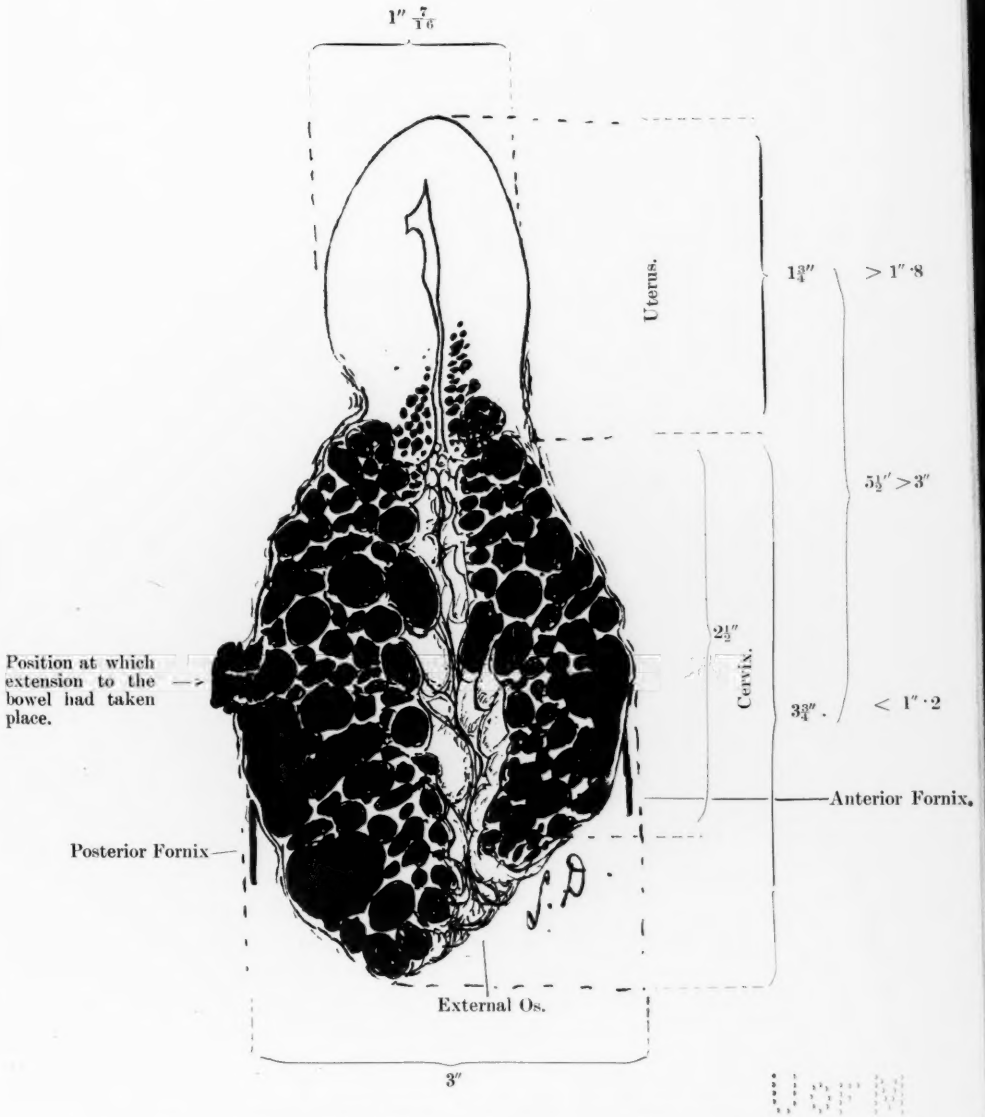

Fig. 1.—Diagram of the Malignant Cystadenoma of the Cervix Uteri.

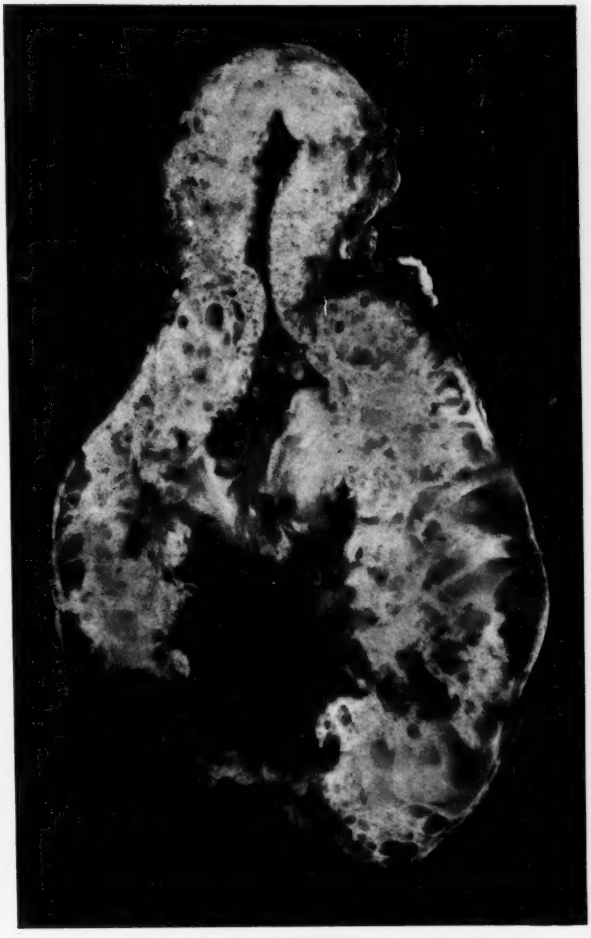

Fig. 2.

Photograph of section of uterus and cervix.

Fig. 3.

Cervical mucous membrane, 1 inch below os internum. ×24.

Fig. 4.

Uterine mucous membrane, $\frac{1}{4}$ inch above os internum. ×24.

it was found that the musculo-connective-tissue layer was not involved, nor was there any attempt at involvement of the uterus or of surrounding tissues. In my case the whole of the cervix was involved, and there was easily recognized involvement of the uterine muscular coats, and, as discovered at operation, extension had taken place to the rectum.

Dr. J. B. Hellier has reported a case, a record of which may be found in the *Proceedings of the Royal Society of Medicine,* 1909–10, vol. iii, Part 2, which appears to be of a similar nature to the one I now record, though the involvement of the cervix had occurred in a very much less degree.

In Veit's *Handbuch der Gynäcologie,* 1898, iii, 2 Halfte, p. 224, will be found a description of this kind of growth, and a detailed description of a similar case is given by Knause and Camerer in the *Zeitschrift f. Geburtshülfe u. Gynäcologie* (Stuttg., 1898, xxxiv, p. 446), but in none of these was there the same extensive involvement and readily recognized invasion of surrounding tissues.

SELECT CLINICAL REPORT.

(Under this heading are recorded, singly or in groups, cases to which a special interest attaches either from their unusual character or from being, in a special sense, typical examples of their class.)

A Case of Pyelonephritis of Pregnancy, with Specimen of the Urinary Organs.

By Herbert Williamson and J. Barris.

Clinical History.

I.H., a primigravida, aged 19 years, was admitted to St. Bartholomew's Hospital, on June 20 1911, complaining of "pain in the right side."

No history could be obtained of any renal affection previous to the present illness.

Menstrual periods were regular until about the end of November 1910, when the patient became pregnant. Since that date there had been no hæmorrhage of any kind.

She was in good health until June 14 1911, when she was suddenly seized with vomiting and acute pain in the right loin. Previous to this attack there had been no severe constipation and no diarrhœa; the diet had consisted largely of tinned foods. From this time until her admission to Hospital the pain and vomiting continued.

The following note was made shortly after her admission:—

The patient looks ill, but is not anæmic. Temperature 102°F., pulse-rate 120. The tongue is furred and brown. The breasts show marked signs of activity, and clear secretion can be expressed. Rising out of the pelvis to an inch and a half above the level of the umbilicus is an elastic tumour like the pregnant uterus; fœtal parts can be felt, but the fœtal heart cannot be heard. The uterine obliquity is towards the right, but its degree is not greater than usual. A tender resistance can be felt in the situation of the right kidney, and a similar resistance, but not so tender, in the region of the left kidney. There is no tenderness over the bladder, and the patient has not suffered from frequency of micturition.

Examination of Urine.

The quantity passed varies from 30 to 48 oz. per diem. It is acid, of sp. gr. 1010, contains no sugar, but albumen and pus are present. The centrifugalized desposit shows the presence of a few pus corpuscles and epithelial cells; no casts are seen. A gram negative coliform bacillus is present in large quantities.

Bacteriological examination. A pure culture of a gram negative bacillus was obtained. The biochemical reactions of the bacillus are as follows:—

Glucose +
Saccharose –
Lactose –
Dulcite –
Adonite –
Neutral Red +
Milk + but no clot.
Indol –
Gelatin + but no liquefaction.

The organism is therefore the bacillus paratyphosus.

Examination of Fæces.

No bacillus paratyphosus was found.

Examination of Blood.

Leucocyte count = 6,800 per c.mm.
Blood culture = no growth.

The patient's serum agglutinates a culture of the bacillus rapidly in dilutions of $^1/_{20}$, $^1/_{40}$, $^1/_{80}$, and $^1/_{160}$.

Course of the Illness subsequent to Admission.

The patient was treated by rest in bed and a milk diet. She was given large quantities of barley water, 10 grains of urotropine and 20 grains of potassium citrate three times daily. After two days of this treatment her condition improved rapidly, vomiting ceased, and temperature became normal and the urine free from pus, though she still complained of pain in the left renal region, and on account of this a physician was asked to examine the chest. He did so, and reported that no abnormal physical signs could be detected.

On July 2, after the temperature had been normal for six days, the ureters were catherized under anæsthesia with a view to ascertaining the condition of the renal pelves. The bladder was washed out with sterile water and a cystoscope passed. The vesical mucous membrane appeared natural. Gum elastic ureteral catheters were then attached, but the right one only could be passed along the ureter. A specimen was then obtained and collected in three test tubes, the first two of which were discarded. The urine was colourless, contained no pus, but on culture a coliform bacillus with the reactions already described was found.

After the examination the patient's colour became blue, the respirations became frequent, the temperature rose to 100°F., and 12 hours later she died.

Post mortem Examination.

(1) The right lung weighed 27½oz., the left 24 oz. Both were engorged and œdematous. About half a pint of slightly blood-stained fluid was found in the left pleural cavity. The presence of this fluid was unsuspected, and as contamination had occurred before it was discovered no cultures were taken.

(2) The heart appeared quite healthy.

(3) The uterus and contents. The uterus contained a fœtus within its amniotic sac. Cultures taken from the liquor amnii grew only a few colonies of staphylococci. The placenta was friable, but otherwise natural. The fœtus was apparently of about 24 weeks' development and was macerated. It presented no other abnormalities.

Cultures taken from the child's blood were sterile, and sections from the placenta failed to show the presence of micro-organisms. We show to-night the urinary organs.

Bladder. The bladder appears natural. Its cavity is neither dilated or contracted, and before hardening was capable of containing 10 ounces of fluid. The wall is neither hypertrophied or thickened, the mucous membrane is pale.

The microscopic section (1) is taken through a fold of the bladder wall, shows slight small-celled infiltrations, but no evidence of an acute cystitis. The fibro-muscular wall appears natural.

The right ureter, below the brim of the pelvis, is of natural size, above the brim of the pelvis it is dilated to the size of a No. 10 catheter; the boundary between the dilated and undilated portions is abrupt and distinct, and is situated four inches from the bladder, and before the parts were disturbed was seen to be exactly at the brim. The wall of the dilated portion is reddened and swollen.

The microscopic section (2) is taken from the dilated portion, and shows that in some parts the epithelium is shed, whilst in others it consists of a double row of flattened cells. The submucous tissue is densely infiltrated with round inflammatory cells, the vessels are dilated, and in some spots hæmorrhages have occurred into the tissues.

The left ureter is dilated throughout its entire length to the size of a No. 15 catheter, the wall is thickened and reddened. When opened the lumen contained purulent fluid, from whcih pure cultures of the bacillus paratyphosus were obtained.

The microscopic section (3) shows that the epithelium is in parts shed, and where it persists is flattened. There is less small-celled infiltration than in the section from the right ureter, but the blood-vessels are more dilated and form conspicuous objects in the section. In one or two places are blood extravasations.

The right kidney is pale, soft, and of normal size. The capsule stripped readily. On section the pelvis is a little dilated, and its mucous membrane is injected. Two small abscess cavities are seen

in the cortex, each the size of a pea, one situated near the upper, the other near the lower pole. These cavities contained necrotic material from which a pure culture of the B. paratyphosus was obtained.

The microscopic section (4) is taken from the cortex near the upper pole.

The microscopic section (4) shows that excepting in the neighbourhood of the abscess cavities, there is very little evidence of small-celled infiltration. In many parts of the section the tubules appear normal, but in some places the epithelium lining them is degenerated, and has undergone cloudy swelling, whilst the inner edge of the cells is ill-defined, and the lumina contain cellular debris. The blood-vessels are everywhere dilated and engorged, and in many places, particularly in the neighbourhood of the collecting tubules, hæmorrhages have occurred into both the interstitial tissue and the tube lumina. Hæmorrhage has occurred in some of the glomeruli, but otherwise they appear natural.

Microscopic section (5) of the abscess wall from the lower pole of the right kidney shows in its peripheral part lesions similar to those already described, the lining wall of the cavity is formed of degenerate tubules surrounded by dense small-celled infiltration and by granulation tissue in which are many plasma cells.

The left kidney is pale, soft and slightly larger than the normal; the capsule stripped readily. On section the pelvis is dilated and contained in the recent state about one ounce of purulent fluid. The mucosa is deeply injected. An abscess, the size of a pea, is situated in the cortex near the upper pole; from the contents of this abscess cavity a pure culture of the bacillus paratyphosus was obtained.

A microscopic section (6) from this kidney shows lesions similar to those described in the right kidney, but the interstitial hæmorrhage is greater in amount, and the degenerative changes of the tubular epithelium are more marked.

We show this section to-night because it presents several points of interest. We have recently had occasion to enquire into the anatomical lesions found in cases of pyelonephritis of pregnancy, and a careful search through the literature has shown that the post mortem appearances have been fully described in very few cases only. We offer this description of the specimen as a contribution to the knowledge of the subject.

In the second place, we wish to draw attention to the infecting organism. Although in the majority of recorded cases the organism belongs to the coli group, it is not invariably the bacillus coli communis. Thus out of eleven cases admitted into St. Bartholomew's Hospital within the last two years three only gave the biochemical reaction of the classical bacillus coli communis. In this case the

organism was the bacillus paratyphosus. As far as we are aware no instance of infection with this bacillus has been recorded in pyelonephritis of pregnancy. The organism was recovered in pure culture from the bladder, from the right ureter by catherization during life, from the pelves of both kidneys after death, and from the abscess cavities in both kidneys, but was not obtained from the fæces or from the patient's blood. It was readily agglutinated by the patient's serum.

A third point of interest lies in the condition of the ureters. The dilatation of the right ureter could be easily explained by the mechanical theory in that the obliquity of the uterus was to the right, and the dilatation of the ureter was limited to that portion situated above the brim of the pelvis. The left ureter, however, was dilated throughout its whole length, and the dilatation cannot therefore be attributed to compression between the gravid uterus and the pelvic bones.

Lastly, we would raise the question of the route of infection in this case. In our opinion the evidence points to an infection by the blood-stream rather than through an ascending infection from the bladder.

Throughout the course of the pregnancy there were never symptoms of cystitis, and post mortem the bladder showed no evidence of inflammation. Further, the distribution of the abscesses scattered through the renal cortex points to a blood infection; and, finally, though we regret that we are unable to offer bacteriological evidence on this point, it is probable that the pleural effusion may have been due to the presence of the same organism.

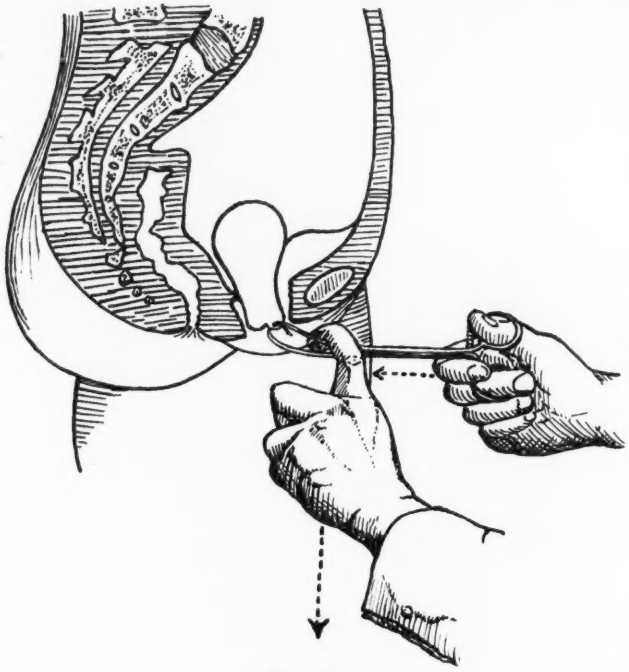

FIG. 3.

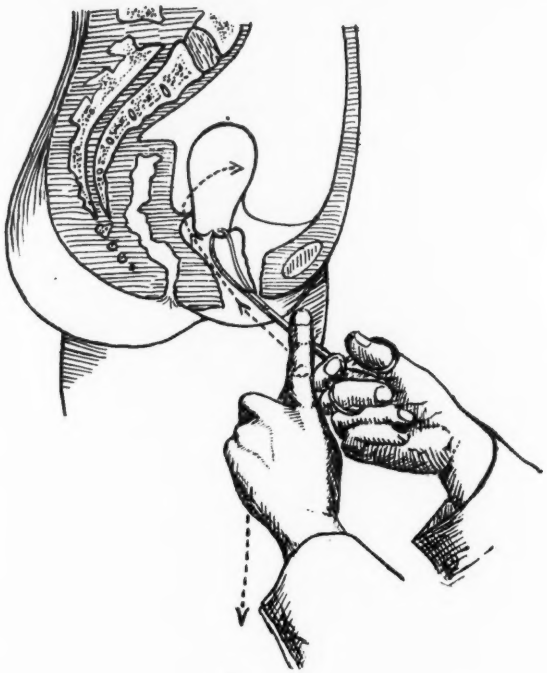

FIG. 4.

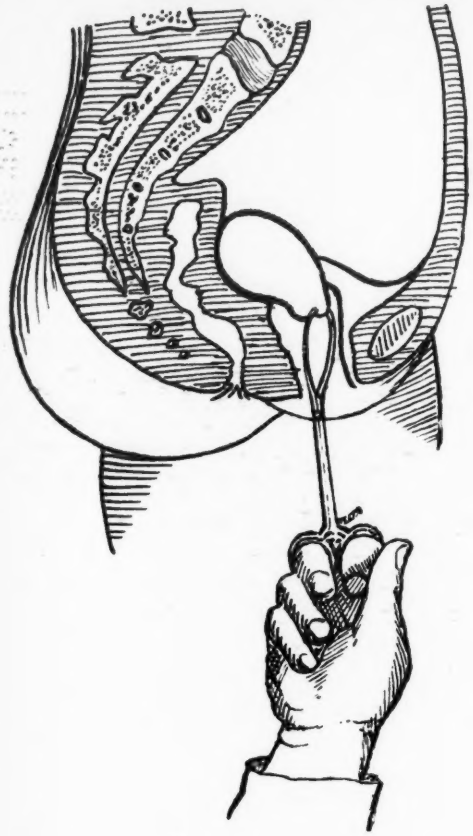

FIG. 1.

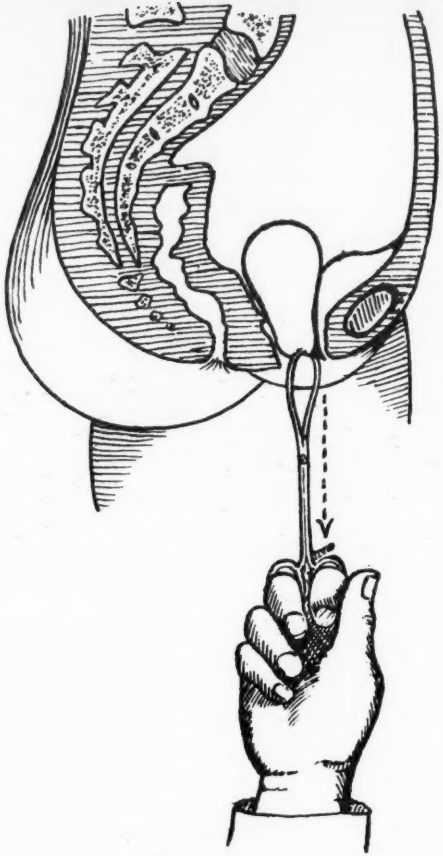

FIG. 2.

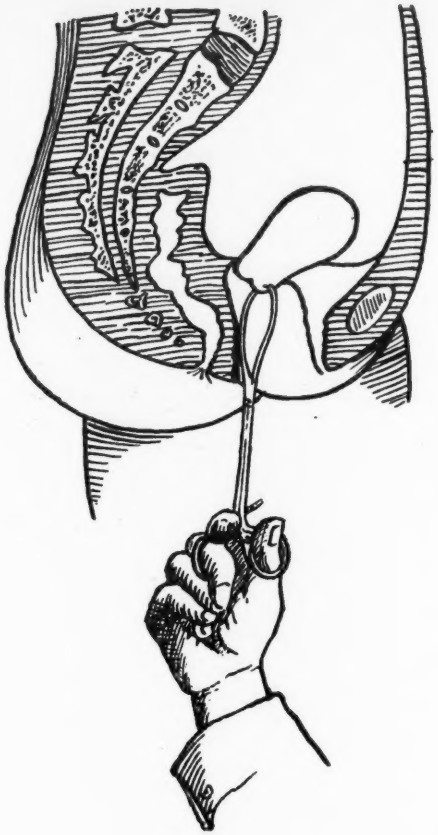

FIG. 5.

TECHNICAL MEMORANDA.

(Under this heading will be published from time to time notes on points of practical interest in regard to methods of treatment, operative and therapeutic, and on the general management of Obstetrical and Gynæcological cases in hospital and private practice.)

A Method of Replacing the Retroflexed and Retroverted Mobile Uterus.

By W. Blair Bell.

The only methods, so far as I am aware, adopted for the replacement of retroflexed and retroverted uteri consist of manual reposition with or without the assistance of the genupectoral position, and with or without traction by means of a forceps attached to the cervix. Unless traction be used it is often impossible to steer the fundus past the promontory of the sacrum, even though the uterus be deflected laterally in the attempt.

As a rule any method in which manual pressure is applied to the fundus per vaginam or per rectum is very painful, especially if the uterus be bulky and œdematous, as is so often the case with backward displacements following parturition.

I have, therefore, for some time been using the following simple method of replacing mobile retroverted uteri:—The anterior lip of the cervix is seized in a pair of volsellum forceps (Fig. 1), and traction is then made in a downward direction (Fig. 2). This straightens out the uterus, and brings the cervix well down to the vaginal orifice. Next, the index finger of the left hand is hooked over the volsellum close to the vaginal outlet, and the right hand carried forward until the instrument lies practically at right angles to the axis of the body (Fig. 3). The volsellum, while held at this angle, is pushed sharply backwards with the right hand, and made to slide under the left forefinger, by means of which the cervix is kept low in the pelvis. After the cervix has been thrust well back into the hollow of the sacrum in this way, and while the hands of the operator are still kept in position the volsellum is made to follow the pelvic curve in an upward direction (Fig. 4). The final position of the right hand (holding the volsellum) is shown in Fig. 5.

By these manœuvres the fundus of the uterus is easily steered clear of the promontory of the sacrum and thrown into a position of complete anteversion without pain to the patient. This method is, of course, only applicable to uteri which are not fixed by pelvic lesions.

REVIEWS OF CURRENT LITERATURE.

UNDER CHARGE OF EARDLEY HOLLAND, M.D.

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Neuropsychopathy of Genital Origin.

BOSSI, Prof. L. M. (Communicated to the 12th session, October 5—7, 1911, of the Société Obstétricale de France.) SUMMARY.—The fundamental principle of gynæcological therapeutics, admitting their beneficial effects upon the nervous system and upon the psychology of women, should be the anatomical treatment of the genital organs so that their functions be restored to an absolutely normal state.

The frequency and gravity of the neuropsychopathy which accompanies disease of the uterus, are not yet sufficiently known and appreciated, because neither in the clinics nor in precept is attention called to the same in any particular way, nor are the necessary methodical researches made on the special cases that present themselves.

The frequency, the gravity, and the healing of this neuropsychopathy are in relation with:

(*a*) The hereditary predisposition.
(*b*) The family and social medium.
(*c*) The duration and chronicity of disease of the uterus.
(*d*) The precocity of the intervention and of the recovery.

The precocious cure and recovery of utero-ovarian alterations should constitute, without however exaggerating, the fundamental principles of social prophylaxis against hysteria and pseudo-hysteria, against epileptiform accesses, against suicide, against crime, and against madness in woman. This prophylaxis should above all be applied when the manifestations I have enumerated appear in women who have a predisposition to such pathological neuropsychic manifestations through their social or family medium, or through the kind of occupation they are employed in, or the characteristics of the education they received, and above all through hereditary transmission.

Meanwhile, with the object of imparting a practical and positive character to my communication and to the discussion that will follow, I present for your approbation the following propositions:

1. That an active propagandism be made, both amongst the medical world and amongst the lay public, against the ever increasing neuro-psychopathic tendency towards suicide, crime, and madness, which may clearly show the very great

influence the genital organs have, from a standpoint of their healthiness and perfect and normal action, upon the psychic conditions and upon the moral character of woman.

2. That in the judicial inquiries of female crimes, and especially in crimes of a passionate character, one should not forget to ascertain from a gynæcologist whether there are any anatomical and functional disturbances in the genital apparatus, and if there are disturbances, to have them attended to and cured: and this both with a view of determining the crime, and in relation to the prophylaxis of future crimes, which those charged or condemned might commit on returning to liberty, either after expiating the sentence, or after acquittal.

3. That the patients who show phenomena of madness be very carefully examined from a genital standpoint, and if possible before their removal to a lunatic asylum, and that if they show any utero-ovarian diseases, they be immediately cured of such diseases in special asylums or in the special sections of the existing Gynæcological Institutes.

One may by these means avoid, perhaps often, as I have learned by my clinical experience, both a declaration of madness and the confinement into a lunatic asylum, two facts which have extremely unhappy consequences in a family, and for two or three generations, by leaving on them the fatal brand of hereditary madness, which will carry its injurious and painful influence over the whole life of the innocent children, not only from a subjective point of view of their individual psychic life, but also in all their social dealings. V. De Blasi.

Vulval Eczema in Children due to Vesical Calculus.

J. Boyd Barrett (*Dublin Journal of Medical Science*, No. 479, November, 1911). In a very instructive and useful article on "Some Surgical Symptoms in Childhood," the author draws attention to the not uncommon association of vulval eczema in children suffering from vesical calculus. The urine is retained as long as possible to avoid the pain associated with micturition. The overflow then causes a trickling of drops of urine and the constant moisture is productive of an eczematous condition of the vulval mucosa. H. B. W.

Implantation of Ureter into Bladder.

H. Jellett (*Dublin Journal of Medical Science*, No. 479, November, 1911). Jellett exhibited at the Obstetrical Section of the Royal Academy of Medicine of Ireland, on May 12th, 1911, a bladder into which he had implanted a ureter according to the method of Professor Alfred Smith. In the course of a Wertheim's hysterectomy for advanced carcinoma cervicis uteri, he found a ureter divided and blocked by malignant growth. The lower end was excised until a portion of healthy ureter was exposed. The bladder was then drawn up and sutured to the ovario-pelvic ligament; a small hole was made at the fundus and the shortened ureter carried into the bladder and sutured in position. Professor Alfred Smith observed that when the bladder was anchored so that it could not retract, it was not necessary to suture the implanted ureter to the vesical wall. All that was necessary was a suture at each angle of the incision in the bladder wall in order to narrow the opening. The rapidity with which the implantation could be performed was a very notable factor. H. B. W.

Tuberculosis of the Uterus.

H. Jellett (*Dublin Journal of Medical Science*, No. 479, November, 1911). Jellett exhibited at the Obstetrical Section of the Royal Academy of Medicine of Ireland, a uterus which was the seat of extensive tubercular disease, removed from

an emaciated subject on account of repeated hæmorrhages and violent pain. A diagnosis of sub-serous myoma had been made, and even after removal areas of the tumour exactly resembled a suppurating myoma. The growth consisted of a mass of small pus-containing cysts, and several sections had to be made before the tubercular nature of the uterus was established. Both Fallopian tubes were closed and tubercular lesions were readily demonstrated in the same. H. B. W.

Decidual Endometritis associated with Grave Uterine Hæmorrhage.

M. Oui (*Bulletin de la Société d'Obstétrique de Paris, etc.*, No. 7, July, 1911). In a communication to the Lille Obstetrical Society, Oui gives details of an interesting of decidual endometritis in a 5-para, associated with serious uterine bleeding. The previous history of the patient revealed nothing of note. The last regular period occurred from October 15—23, 1910. At the beginning of November a slight blood-stained discharge was noted and continued almost daily until the end of December. On December 31 acute abdominal pain was experienced and a very severe 'flooding' set in. During January the bleeding ceased but recurred in February and practically continued until Oui saw the patient on March 21, 1911. The uterus then reached 22 cm. above the symphysis. The cervix was long and hard, and the lower uterine segment appeared to be distinctly full. The diagnosis lay between placenta prævia and decidual endometritis. As the bleeding continued in spite of all treatment, it was decided to evacuate the uterus. This was accomplished after dilatation of the cervix by Hegar's dilators and a Champetier bag. The amniotic fluid was brown and offensive, and the placenta, which had to be removed by hand, was situated at the left uterine cornu. The membranes were considerably thickened. The patient made a good recovery.

Oui, in discussing the case, remarks that although hæmorrhage is a usual symptom of decidual endometritis, it is rare to find it as excessive as in this case, where it produced syncopal symptoms. He also observes that a Champetier bag must be used with care as very serious concealed bleeding may occur before the expulsion of the same. H. B. W.

Fibromatous Tumours of the Mesentery in Women.

Greer (*Brit. Medical Journal*, October 28, 1911) tabulates 33 cases of tumours of this class. 21 developed in females, 11 in males, and in one the sex is not stated. The largest weighed 40 lb., the operator was Lathuraz (Gildemeister, *Beitrag zur Kenntniss der Mesenterial tumoren*, Inaug. Dissert., Breslau, 1902), the next largest, 30 lb., was removed by the present reporter ("Fibromyoma of Mesentery," *Brit. Med. Journ.*, vol. ii, 1904, p. 1075). Both recovered and the tables show that enucleation was effected in both without damage to intestine or resection. Both occurred in women, and no case where the tumour attained nearly such large proportions has been reported in a male subject. On the other hand, in Greer's own case, where a fibromyoma developed in a man aged 54, the tumour required separation from close connections with the superior mesenteric artery, though it was a little under 3 lb. 5 oz. in weight; the patient recovered. Out of the 21 cases in women, one did not undergo any operation, 4 died after operation, one (where the fibroma was extensively calcified) was reported two days after the removal of the tumour, and the remaining 15 recovered. In nearly all cases enucleation was practised, but in Péan's the new growth was removed by morcellement and a pedicle found and ligatured. In 3 cases which recovered resection of intestine was practised and Murphy's button employed in all three. In one, nearly 14 inches of ileum were excised, the patient was three months pregnant, in the second 24 inches of adherent intestine were resected, in the third some ileum, the length of which is not stated,

was removed, and the tumour was found to be necrotic in the centre. The wound was closed without drainage, but had to be re-opened on the third day and drained, purulent parotitis developed, but the patient recovered. The statistics show that with aseptic precautions enormous fibromas, fibromyomas, and fibromyxomas of the mesentery may be successfully removed, but the records of mortality are untrustworthy as bad cases are not always reported. ("We ourselves know of two which would make these statistics much higher," Bégouin, "Traitement des tumeurs solides et liquides du mésentère," *Rev. de Chirurgie*, vols. xviii, xix.) The growth of these tumours may be very slow, as long as 15 years in the case complicated by parotitis during convalescence, but Masset finds that as a rule it is rapid enough to set up pressure symptoms and interfere with nutrition soon after detection. Diagnosis is difficult, the most constant symptoms are pain and constipation and there may be nausea, vomiting, and emaciation, but all these symptoms may be absent. Diagnosis is difficult, hence these tumours are often taken for ovarian, uterine, or omental growths or for cysts as they are sometimes highly œdematous. Lastly, Greer's tables establish the fact that, as might be expected, fibroma of the mesentery is essentially the same in women as in men. It is doubtful if this class of new growth be really more frequent in the female, but women are the more ready to seek medical relief, whilst very slow growing tumours in males are likely to be overlooked. They certainly are not of uterine origin, but are homologues of fibroma of the broad ligament. A. D.

Supernumerary and Accessory Ovaries.

Mauclaire and Eisenberg-Paperin (*Archives gen. de chirurgie*, July, 25, 1911, and Mériel, *Paris médical*, October 14, 1911) have published during the present year two communications on certain structures which are called supernumerary ovaries or accessory ovaries by different writers, some of whom do whilst others do not distinguish two varieties, one essentially supernumerary, the other purely accessory. As even the mere definition of these adjectives is not agreed upon, there are great discrepancies between different reports on these structures involving confusion which the authors of the two memoirs endeavour to clear away.

Dr. Mauclaire and Madame Eisenberg-Paperin distinguish two varieties: (1) contiguous supernumerary ovaries placed on or close against the anatomical ovary and (2) aberrant supernumerary ovaries lying either at some point along the line of descent followed by the ovary in its migration in early fœtal life, or else more or less away from that line. These ovaries have been found in an extraperitoneal situation but only when the seat of pathological changes. They are very liable, relatively speaking, to new growths, especially to cystic degeneration.

The authors have prepared a valuable and instructive series of abstracts of no less than fifty-one reported cases. They are careful to warn the reader that in many instances there has been no microscopic proof of the nature of the "ovary," on which account they have not classified the abstracts but arranged them in chronological order as they were reported and interpreted by the authors. Some interpretations are uncertain, thus Bassini operated, removing a tumour which had microscopically all the characters of an ovarian cyst and weighed 2½ lbs. The superior mesenteric artery required ligature during its removal, and it extended to the left kidney. The two ovaries and the uterus were found to occupy their normal position and appeared quite healthy. Sippel removed a pair of dermoids on the right side, they seemed connected with each other; the left ovary was normal. Hoegh performed a double ovariotomy on a patient who married a year later and bore a living, well-formed child to term. "Possibly a piece of ovarian tissue was left behind after the operation." Mr. J. D. Malcolm's cases are included ("Four cases in which a cystic ovarian tumour, which was not malignant, developed after a similar growth

of the ovary on the same side had been removed." *Lancet*, ii, 1903, p. 1227), but the reference is inaccurate, clearly at second hand, Malcolm's main argument is thus expressed in the original: "I have no doubt that it is impossible sometimes to be sure that the ovaries are completely removed, so that from time to time other cases will crop up in which a new but not malignant growth of the ovary develops after an operation in which it is supposed that complete extirpation has been effected." Another case is to be found in that series, where the appendages were removed together with the uterus by the reporter ("Harveian Lectures on Fibroids of the Uterus," lecture i, *Lancet*, vol. i, 1903, p. 352). On microscopic examination, Dr. Cuthbert Lockyer detected ovarian tissue in the *ovarian* ligament of one of the ovaries. Unfortunately it is, without doubt, quoted from a second hand source, as it is stated that Dr. Lockyer demonstrated that "*il s'agissait d'une masse accessoire logée dans le ligament large . . . C'est donc un* OVAIRE ACCESSOIRE DU LIGAMENT LARGE"—the last five lines are written in italics in the original. Dr. Mauclaire and Madame Eisenberg-Paperin are quite right in warning their readers about the "interpretations" of the original reporters, but unfortunately they have, through the perilous medium of second hand quotations, included cases where the reporters wrote of ovarian tissue left behind and not of accessory ovaries, and one instance at least where the site of the ovarian tissue is given quite inaccurately. Nevertheless their communication is of much utility. Mériel's memoir is a good and well-digested summary of the subject, without any abstracts. He finds that these aberrant ovaries are present in at least 4 per cent. of all female bodies, taking all ages into consideration. The reports of those detected in post-mortems on infants and children are clearly far more reliable than records of the removal of abdominal tumours where the operator may be prejudiced through a desire to account for some peculiarities in the after histories. These bodies are generally small, about as big as a pea, they may be no larger than millet seeds, but some have been noted which were of the size of a cherry. Mériel distinguishes two varieties: (1) the contiguous or double ovary, which includes the great majority of reported cases, and (2) the ovarian body distinct from the anatomical ovary. Practically this classification is identical with Mauclaire and Paperin's, but Mériel refers more cases to the first variety. The second type is of higher pathological interest, it may lie in the folds of the broad ligament, against a ureter, under the peritoneum or in one of its pelvic pouches. It is but rarely pedunculated. Mériel feels much more confident than do the authors of the first paper as to the origin of the aberrant or true supernumerary ovary. The 'contiguous' or double ovary is known to be formed by the division of the gland into two parts by peritoneal bands late in fœtal life. The two parts are always separated by true cicatricial tissue, and they occupy the site of the normal ovary. The aberrant type is developed by the same agency, fœtal peritonitis, very early in fœtal life, before the ovary has reached its permanent situation close against the uterus. The lower part descends till it reaches that situation, the upper cut off by bands of adhesion or torsion remains where it was when the lesion occurred, or perhaps descends later on but fails to join the rest of the ovary. This latter descent is noted by Mériel, who seems to reckon it as a secondary displacement; thus a supernumerary ovary has been found attached to the great omentum, the small intestine, the cæcum, colon and the outer surface of the parietal peritoneum. One pathological truth of high importance has been established. Supernumerary ovaries are very liable to become the seat of new growths. The same, as pathologists have already shown, is the case with aberrant thyroid and adrenal bodies. Mériel finds no less than 30 reports of tumours developed in aberrant ovaries. Dermoids seem specially frequent and thin-walled cysts of the broad ligament type have been noted (14, Mauclaire-Paperin), as well as cyst adenoma and one racemose ovarian cyst (Amann). Mériel includes the post-operative menstrual cysthæmatomas described by Dartigues (*Revue de Gynécologie*

et de Chir. Abd., February, 1908). Above all, the supernumerary ovary explains how pregnancy may occur after double ovariotomy and now, as is well known, the catamenia may continue with perfect regularity when both ovaries have been excised.

A. D.

An Extra-abdominal Multilocular Ovarian Cyst.

THOMAS S. CULLEN (*Journ. Amer. Med. Assoc.*, vol. lvii, p. 1251, 1911). This case is probably unique in literature. The patient was aged 56 and had eleven children. For about ten years she had noticed a little tumour situated on the right side of the abdominal wall below the umbilicus. During the last ten months this small lump had grown to about the shape and size of a kidney. The tumour seemed to lie exactly underneath the skin and on operation proved to be a multiocular ovarian tumour. There had evidently been a hernial protrusion through the right lateral abdominal wall into which the ovary had dropped and remained for several years. During the last year it had increased in size and given rise to a multiocular cyst. Naturally with the increase in size, the escape of the ovary from the sac was impossible.

C. N. L.

Ovarian Cyto-toxins.

DELLE CHIAIE (*La Ginecologia Moderna*, August, 1911) draws the following conclusions from experiments made on dogs with injections of blood: (1) Defibrinated blood or blood-serum from a dog which has undergone single or double oöphorectomy produces fatty degeneration of the ovarian follicles, liver, and kidneys in animals of the same species. Blood from a normal dog produces the same result, and a like degenerative effect occurs if a dog be injected with its own defibrinated blood or if normal blood be injected into an animal previously castrated on one side only. (2) Functional lesions of the organs correspond to the anatomical changes, and sterility results. (3) The destructive toxic effects on the ovary vary in intensity in relation to those which take place in the liver and kidneys, and in the latter organs the changes induced are much less extensive and severe. There is an evident and constant gradation in the degenerative ovarian process, and its gravity varies according to the amount of injury in the animal from which the blood was taken. (4) The toxic action of the blood is in no way modified by pregnancy, and the anatomic alterations of the ovarian follicles must be attributed to the action of alexins circulating in the blood. These changes do not differ from normal involutionary processes in the ovaries, except in degree, and this is due to the greater rapidity with which the toxic agent acts. The cause therefore of the continuous physiologic destruction of the ovules is the action of products drawn from metabolism of the tissues. (5) The ovary and perhaps more especially the corpus luteum are endowed with a special anti-toxic function against such deleterious substances, by means of which they limit and regulate the normal destruction of parenchyma. The most vulnerable part of the ovary is the ovule, whatever be its stage of development. The elements of the granulosa oppose a greater resistance, and only secondarily undergo degenerative modifications. The false corpus luteum must be considered a connective tissue not an epithelial formation. (6) The law of cyto-toxins is based on false principles since injections of normal blood produce degenerative changes also in the liver and kidneys, but failure to discover an ovarian cyto-toxin may have a physiological significance, since it suggests the possibility of an anti-ovarian toxin. Ovaran cyto-proteids (Carnot) cannot be demonstrated. (7) Some ovarian lesions and some forms of sterility, of which the pathogenesis escapes clinical investigation, may find their experimental demonstration in these researches. If, in the future, the results could be applied to the human organism, they might furnish a means, not only of curing certain morbid conditions, but of securing sterilisation where indicated therapeutically.

J. H. F.

Torsion of the Great Omentum. A case clinically resembling Ovarian Cyst with Twisted Pedicle.

J. P. HEDLEY (*British Medical Journal*, November 11, 1911) first mentions the rarity of these cases, the reported ones being less than one hundred, and then continues with the history and condition of the patient and the treatment. He says that he never suspected he was dealing with anything but an ordinary ovarian cyst with a twisted pedicle, until he examined the patient under the anæsthetic before operating, when it was clear that there was no large cyst but an irregular elastic mass, which he thought might be a cystic adenoma of the ovary in which the main cyst had ruptured.

He concludes with a short reference to the other reported cases. J. M. W.

Primary Carcinoma of the Fallopian Tube.

E. E. MONTGOMERY (*Journ. Amer. Med. Assoc.*, vol. lvii, p. 1417, 1911) speaks of the frequency of carcinoma of the cervix and ovary, but says that it is seldom transmitted from the ovary to the tube.

Primary carcinoma of the Fallopian tube is a rare affection when compared with the frequency of carcinoma in the uterus, but it occurs more frequently than is supposed.

In early stages the disease presents no definite symptoms. The most frequent are menorrhagia and a watery discharge, and the appearance of such symptoms accompanied by pelvic disorder should be an indication for early operative investigation and specimens removed should as a routine procedure be subjected to microscopic examination.

He quotes the following case.

Patient aged 34, married twice but never pregnant History of tuberculosis for which she had been treated during the last two years and had apparently recovered. Menstruation profuse, painless and regular, except the last five months when she experienced pain in the pelvis for four or five days preceding the periods, which occurred every three weeks, lasting three to four days and were very profuse. She had also during this time noticed a whitish discharge.

On examination retroversion of the uterus was found and behind it to the right a mass the size of a walnut which was quite movable.

The patient was operated on, on September 10, and this mass was found to be a neoplasm of the end of the tube, which was not adherent, but freely movable. This was removed. The neoplasm when cut through gave the appearance of a fibroid undergoing fatty change. Microscopic examination showed the growth to be cylinder-cell carcinoma.

Following on this report, the uterus, the remaining tube, and both ovaries were removed. The left tube had previously been found to be considerably thickened in its central portion and the pathologist reported it to be a tuberculoma. The patient was discharged a month later in good condition, and at the end of eight months she had gained 50 pounds and seemed in the best of health.

Montgomery considers that all neoplastic masses of the tube should be subjected to microscopical examination, for only thus can the diagnosis as to malignancy or non-malignancy be accurately determined. C. J. N. L.

Wassermann's Reaction in Maternal and Fœtal Blood.

SERRA and GENTILI (*La Ginecologia Moderna*, June, 1911) have instituted researches on the reaction of Wassermann in the blood of the umbilical cord, in the maternal blood, and in the fœtal blood after birth. After examination of all the facts noted they find that: (1) Women affected by florid syphilis give the highest

percentage value of positive reaction. In their case the behaviour of the maternal and of the fœtal blood is identical. (2) Such percentage value is much lower in women affected by latent syphilis ,and is less the further back the date of infection. The behaviour of the maternal and of the fœtal blood may vary, and there may be a negative reaction in the serum of blood taken from the brachial vein of the woman, and a positive in the blood of the umbilical cord. (3) Maceration of the fœtus cannot in itself be considered as the effect of hereditary syphilis, since it occurs, though rarely, in women in whom all clinical data indicatng syphilis are wanting and where both maternal and fœtal blood give a negative Wassermann reaction. (4) In one case, a partial but positive reaction was found in the last days of pregnancy and after delivery in the maternal blood, and a negative reaction in the blood of the umbilical cord and of the fœtus after delivery. A positive reaction appeared partially in the infant's blood after 10 days, and then entirely after 60 days, coinciding with an outbreak of symptoms of hereditary syphilis. (5) No parallelism exists between alleged placental modifications in syphilis (proportional increase of weight, infarcts, etc.) and a positive Wassermann reaction. A positive reaction is obtained in umbilical blood drawn from a placenta of perfectly normal appearance belonging to a syphilitic woman, and a negative reaction in the blood of a healthy woman in whom the placenta might show characteristics, commonly attributed to syphilis. (6) Wassermann's reaction may be positive, not only in women recently infected by malaria in whom there is rise of temperature and presence of parasites in the blood, and in women who are suffering from eclampsia. This reaction may take place contemporaneously in the blood of the umbilical cord, and in a less degree and very partially in thel fœtal blood some days after birth. It usually appears at the height of the disease and disappears near its termination. (7) The methodical carrying out of these serum reactions, the just interpretation of their results, and of the other causes besides syphilis which give a positive response, is of great value in the diagnosis of latent syphilis in mother and child. The serum reaction would seem to be the most trustworthy guide, and the physician should chiefly rely on it in deciding the lactation of the child. J. H. F.

Vaginal Septum and Labour.

M. Vouters (*Bulletin de la Société d'Obstétrique de Paris, etc.*, No. 7, July, 1911). Vouters records a labour in a primipara, æt. 32, complicated by a vaginal septum reaching to within 2 cm. of the vulva and extending upwards to a distance of 8 cm. The patient, eight months' pregnant, was seen in labour with the vertex presenting. The cervix had been completely dilated for 4 hours and the membranes had ruptured 24 hours previously. As delivery was impossible, Vouters divided the strong septum between two catgut ligatures. Forceps were then applied and the head delivered without difficulty. H. B. W.

Twin Pregnancy in Uterus Bicornis.

Phelps G. Hurford (*Journ. Amer. Med. Assoc.*, vol. lvii, p. 1450, 1911) reports a rare case of this pregnancy. The patient was 34 and was first seen in March, 1911. She was four months pregnant and very uncomfortable. She had acute attacks of indigestion and a very irritable bladder, being obliged to pass water three or four times at night. She had had two premature deliveries before and each was attended with similar pain and discomfort. The patient was in good general condition, but somewhat nervous. The fœtal movements could not be felt and the fœtal heart could not be heard. There was a notch in the upper middle portion of the uterus, but no importance was attached to this finding. A mass was felt on either side. The patient went on in much discomfort for two months more. Later examination revealed something radically wrong in this case. Movements

and heart beat could be made out on the right side, but never on the left. On June 3rd premature labour began. The patient had good pains through the night, but these unaccountably stopped in the morning. Dilatation was then complete and the membranes were ruptured. The umbilical cord was through the pelvic inlet and the head beside and above it was not engaged. The cord was pulsating and the mother and child in good condition. Twins were thought a strong probability.

That evening artificial delivery was performed under chloroform. Version was performed and one living and one dead child delivered. The uterus was divided by a septum to a point well below the umbilicus and a fœtus occupied each side. Both were vertex presentations.

The uterus contracted promptly and showed two separate fundi—a typical uterus bicornis. Convalescence was uneventful. Involution proceeded normally, and after two months a vaginal examination showed clearly the two cornua, each about the size of the normal fundus and separated from each other enough to allow the two examining fingers between them. C. J. N. L.

Torsion of a Funis as a Cause of Death of Twins.

H. A. Lediard (*Lancet*, October 28, 1911) discusses shortly the etiology of this subject, mentioning that modern text books seem to regard it as a matter of small concern, and probably of post-mortem occurrence resulting from the great mobility within the uterine cavity of a fœtus that has died from the fifth to the seventh month of pregnancy.

The case he reports was in a multipara, who dated her pregnancy from June 3rd and felt movements up to the night of November 12th, four days later she reported herself at the hospital and stated that the abdomen felt "heavy," "much heavier" than it had been. Several examinations were made and confirmed the probability of a dead fœtus, so labour was induced and some hours later twins (both dead) were easily expelled.

The twins were both female and presented different appearances. The cord of one was twisted close to the body in such a way, that it was reduced to the size of a pencil, the cord beyond the twist being swollen to a considerable size in comparison with that of the other fœtus.

Both fœtuses were in the first stage of decomposition, but the fœtus with the twisted cord was a little smaller, and a little further decomposed than the other.

The inference the author draws, is that both the fœtuses were developing equally, but that the cord of one became strangulated and caused its death. This was not noticed by the mother owing to the movements of the twin. Then the placental circulation became interrupted, possibly from the thrombosis, and the twin died on November 12; the interval between the two deaths probably being not more than from seven to ten days.

He says there was no other obvious cause for the death of the fœtuses, syphilitic histories being negative and both parents healthy. J. M. W.

Rupture of Gravid Uterus at 7th Month: Fœtus found in Parietal Abscess.

Kubacki (*Nowiny lekarskie*, 1910, No. 7, abstract in *Zentralbl. f. Gynäk.*, No. 40, 1911) attended a woman, aged 37, vi-para, for severe flooding during the seventh month of pregnancy. There appeared to be placenta prævia. The bleeding stopped and in the course of the next month the fœtal movements ceased. The patient's general condition was good and the pulse and temperature were normal. The fœtus felt very prominent on palpation. At the beginning of the ninth month an abscess as broad as the palm of a man's hand appeared between the navel and the symphysis. It subsided spontaneously. The patient was received into a nursing establishment.

As the abscess cavity was being cleaned the breech of the child was found presenting in it. The child was delivered. Then the placenta was detached from the uterine cavity and extracted. Recovery was slow; the pelvis and abdomen were examined a few months after delivery and the uterus was found with its body quite free from the parietes, but it was drawn distinctly to the right through shortening of the right broad ligament. The author notes that the pregnancy was clearly intrauterine, as was proved by the placenta found in the uterine cavity. The flooding in the seventh month was due not to placenta prævia but to rupture of the uterus with partial detachment of the placenta and delivery of the fœtus into the mesometrium or lower part of the broad ligament. The child developed for a few weeks, then died and set up suppurative changes in the surrounding connective tissue.

[According to Taylor's nomenclature this case would be called, we presume, an anterior utero-ligamentary pregnancy. In his anterior tubo-ligamentary pregnancy the fœtus is delivered into the mesometrium leaving the placenta in the tubal sac, its original site, just as in Kubacki's case it was left in the uterine cavity. The fœtus then develops so as to push up the anterior layer of the broad ligament, till it ultimately comes to lie in front of the parietal peritoneum. In other words, this second stage is the same, whether the fœtus issued from the uterus or from a tubal sac. Suppuration or sloughing occasionally occur in anterior tubo-ligamentary pregnancy, as in Marmaduke Sheild's "Case of Extra-uterine Gestation associated with Sloughing of the Abdominal Wall and Attempted Extrusion of a Matured and Putrid Fœtus near the Umbilicus" (*Trans. Obstet. Soc.*, vol. 33, 1891, p. 148). This communication includes a good diagram, which as far as the preperitoneal position of the fœtus is concerned, applies as well to Kubacki's as to Sheild's case. Rep.]

A. D.

Should Remnants of Placenta after delivery or at near full term be removed or not?

Hörmann (*Monatasch. f. Geb. Gyn.*, Bd. xxxiv, Heft 4, S. 412). For some time back Winter has repeatedly stated his views with regard to this matter, which do not correspond with those generally held. The question to be answered is whether retained fragments of placental tissue can give rise to severe infections, so long as they are left undisturbed. The opinion almost universally held is that severe even fatal infection can occur from this cause, whereas in 13 of 22 cases recorded by Winter there was no febrile reaction up to the time when the uterus was cleared—this period ranging from 6 to 63 days, while in the remaining 9 cases none showed a real infection, but some more or less severe and long-lasting conditions of resorption.

Hörmann's observations are founded on 36 cases of retained placental structures after delivery at or near full time, and of these, 20 cases were afebrile as long as 26 days, while 16 showed febrile reaction before emptying of the uterus though this was but slight in 14 cases, and none showed symptoms of general toxæmia. Two cases showed signs of sepsis before the uterus was cleared, in both on the third day after spontaneous delivery of child and placenta, there appeared rise of temperature with rigors, and severe general symptoms, with marked rise of the pulse-rate; in one case the clearing out of the uterus was followed by immediate fall of temperature, in the other by a tedious exudative parametritis with final recovery. In both these cases there was no other obvious cause for the septic condition except the placental retention. Thus the writer agrees so far with Winter that in actual fact, there is no foundation for the general opinion that retention of portions of the placenta *frequently* cause severe puerperal fever.

The writer also shows from the records of post-mortem examinations on women who died during the puerperium from intercurrent diseases such as tubercle, facial erysipelas, fracture of skull, pneumonia, etc., that though placental remains were found on the uterus no disturbances of that organ were manifested.

Winter found from his results during the period when he employed active treatment instead of expectant, that in 22 cases of retention after delivery at full time he had only 7 which were free of rise of temperature, while in 15 he got slight and severe symptoms of resorptive fever and endometritis (7 times), parametritis (4 times), pyæmia (4 times with 2 fatal cases). Of these 22, prior to interference 13 were free from fever, and 9 showed only some resorptive symptoms, but no true infection. He gathers from this experience that the removal of retained placenta frequently is attended by serious danger.

Hörmann, from study of his 36 cases of some of which brief details are given, finds that in no case could it be said that owing to an avoidable interference in the way of emptying the uterus, a slightly febrile patient became a serious one, or that the death of a patient was brought about by the propagation of infection as a result of interference, so that he cannot base a policy of expectant treatment in such cases upon statistics alone. His next important finding is that amongst his cases the weightiest complication of retention of placenta is not the risk of infection, but hæmorrhage; which in by far the greater part gave the indication for prompt treatment. He states it thus. Every woman who has a portion of placenta retained in her uterus is constantly in danger of a severe hæmorrhage which may be fatal, for the prevention of which no provision is possible other than the removal of the retained tissue.

He sums up: (1) Actual examination of cases shows, as Winter has already shown, that placental retention does not frequently give rise to severe puerperal fever. Most cases run an afebrile course.

(2) No support is got from his cases for Winter's statement, that by interference a slight case may be converted into a serious or even fatal infection.

(3) The proposal of Winter based on the previous assertion, to leave so far as is possible all cases till they spontaneously expel the retained portions, is in Hörmann's opinion impracticable in some 80 per cent. of patients, seeing that one is driven to immediate interference because of hæmorrhages, and this specially applies to cases in private practice which may at any time assume a serious complexion.

(4) It would be useful if a bacteriological classification of cases could be framed, showing which are likely to give trouble and which are not, with special stress on the anærobic organisms. W. R. P.

Cæsarean Section.

Davis (*Surgery, Gynæcology, and Obstetrics*, October, 1911). The author gives a critical analysis of 104 cases of Cæsarean section which he has performed. Of these cases, 85 were operated upon for contraction of the pelvis with a maternal mortality of ten (11·7%), and a fœtal mortalty of eleven (12·9%).

The maternal mortality is made up as follows: Five were definitely infected on admission, one had septic meningitis, and four were "clean" cases. Two of these last cases died of sepsis; one died of hæmorrharge from "atony" of the uterus; and one died apparently from the effects of the anæsthetic. Out of the total fœtal mortality of eleven, three were stillborn, and eight died in hospital.

The other indications for the operation were: Eclampsia, eleven cases (mortality 27·%); various neoplasms, six cases; placenta prævia, one case (died of sepsis); and pneumonia, one case, which also died.

The technique, as performed by this operator, differs only from that usually employed in that, after the delivery of the child, the bleeding from the uterus is controlled by traction at the upper angle of the uterine incision; this is said to close the sinuses and so arrest bleeding. W. W. K.

After-results of Conservative Operations on the Pelvis.

JACOBSON (*Revue de Gyn.*, July, 1911) gives details of a series of his own cases which he has followed up. He concludes:

(1) Conservative surgery is indicated in young women who have had no children.

(2) In women of the working classes and those approaching the menopause such operations should be recommended with caution because of the risk of recurrence of symptoms.

(3) For difficult cases laparotomy is indicated rather than the vaginal route.

C. W.

A Pseudohermaphrodite.

CULLEN (*Surgery, Gynæcology, and Obstetrics*, October, 1911) describes an interesting case of this condition. The general aspect of the patient was that of a male except that the hair was long. There was no clitoris, but in its place a well marked penis two inches in length. Otherwise the external genitalia were of the female type. The vagina was 1¼ inches in length and partly closed by a hymen. No uterus or ovaries could be detected on bimanual examination. The patient was suffering from a right inguinal hernia, which was found to contain a testicle, on microscopic examination. There are some excellent illustrations by Max Brödel.

W. W. K.

A Case of Ante-natal Pneumonia.

A. T. I. MACDONALD (*British Medical Journal*, November 11, 1911) reports a case of a woman, admitted to the Glasgow Maternity Hospital with a well advanced pregnancy, and suffering from acute lobar pneumonia, who was delivered two days after admission, at 10-30 p.m., of a child, 19 inches long and weighing 6 lbs.

The child was feeble but cried soon after birth. It was slightly cyanosed during the night but improved in the morning. Later in the day the breathing became laboured and the cyanosis increased. Respiration became sighing and mucus accumulated in the larynx, only one or two feeble efforts at coughing being made, the child finally dying 28 hours after delivery.

Post-mortem showed: the right lung, upper and lower and post half of middle lobes in a stage of red hepatization; the left lung, lower lobe congested, upper lobe minute beads of interstitial emphysema. Liver and kidneys markedly congested. Films from the lungs showed the presence of large numbers of pneumococci. He concludes, that owing to the advanced inflammatory changes present in the lungs the condition had originated in utero, also had it arisen from insufflation of liquor amnii or vaginal discharge, that it would have had a lobular rather than a lobar distribution. He concludes with reference to the writings on this subject.

J. M. W.

Intra-Uterine Ophthalmia Neonatorum.

W. A. NEWMAN DORLAND (*Journ. Amer. Med. Assoc.*, vol. lvii, p. 1285, 1911). The patient, aged 24, was first seen when well advanced in the first stage of labour. The membranes had ruptured spontaneously seven days beforehand, but there had been no perceptible labour pains in the meantime. Labour was easy and uneventful. The baby's eyes were found to be the seat of advanced ophthalmia of a virulent nature. One eye was lost and the other showed almost complete corneal opacity from ulceration. The mother passed through a normal afebrile course in spite of the fact that she had virulent vaginal infection by the gonococcus.

C. N. L.

Theses.

Thèse de Nancy, 1911.

Post partum gangrene of the extremities. Winterer (No. 10) has collected 31 cases.
Thèses de Toulouse.

Vaginal thrombosis. Cros (No. 923, 1910). Well written rather than original, but describes numerous cases.

Pregnancy and labour in the "medium multipara." Sambucy's (No. 933, 1911) thesis closes a series in Audebert's clinique: the others considered primiparas and high multiparas.

Prolonged retention of dead fœtus in first half of pregnancy. Mlle. Spiridonova (No. 12, 1911). A study of "hæmatoma mole."

Infantile mortality (in the first year) at Toulouse, from 1900—1910. Souquet (No. 939, 1911).

Electrolysis and radiotherapy in uterine fibroids. Herman (No. 940, 1911) favours a trial of Apostoli's treatment before radical operation.

Artificial abscess in puerperal infection. Buchenaud (No. 941, 1911), with some limitations, recommends Fochier's turpentine injections.

The time at which engagement occurs in vertex presentations. Baux (No. 949, 1911) works out Audebert's observation that engagement occurs later than is usually taught. He estimates the time of engagement by measuring the distance from the fœtal acromion to the symphysis, under 8 cm. in anterior positions, under 9·5 cm. in posterior positions. After studying 300 women Baux finds that in normal primiparas the head L.O.A. engages 18 days before labour, and R.O.P. twelve days, in multiparas at or just before onset of labour. A mobile head early in the ninth month in a primipara does not imply an abnormality.

Utero-parietal fistulas following Cæsarean section. Nuville (No. 950, 1911) blames silk sutures.

Ante- and post-operative treatment in Cæsarean section. M. de Rudelle (No. 951, 1911) shows advantage of preliminary treatment.

Enteric fever in pregnancy. Esclavinat (No. 957, 1911) says it runs a normal course but brings on premature labour in two-thirds of the cases. Labour should not be induced.

Enterostomy as treatment for peritonitis. Divet (No. 272) finds this succeed where stomach washing and rectal injections fail to restore peristalsis.

Painful points on the abdomen. Mlle. Weil (No. 274) details the distribution of the nervous plexuses and shows what diseases are simulated by various neuralgic pains.

Vaginal cystocele. Serée (No. 278).

Congenital dislocation of the hip. Chataing (No. 283) reviews the cases seen at the clinique Tarnier, 1907—1911. It rarely causes trouble in labour: beyond precipitate delivery of the head causing rupture of the perineum.

Fallopian tube. Katz (No. 295) working with Pozzi describes the changes in the ciliated epithelium due to the internal secretion of the corpus luteum.

Gravid retroversion. Lerat (No. 297) has collected 45 cases treated by laparotomy: he recommends "*ligamentopexie.*"

Mammary opotherapy in fibroid hæmorrhages. Luncz (No. 298).

Puerperal tetany. Mlle. Klein (No. 302) says this condition does not differ from ordinary tetany.

Underfeeding of infants. Mlle. Vigor (No. 309) says the infant should get a ration equal to $\frac{1}{5}$—$\frac{1}{6}$ of its weight, in feeble children up to $\frac{1}{4}$. She admits that a cause of error is ill-nourishment caused by overfeeding.

Fecundation of mammals. Lafaix (No. 314) finds two mitoses, the first in the ovary in March, the second in the ovary, continuing in the tube, in December.

Urethral polypi. Dinnematin (No. 317) notes the tendency to recurrence of urethral caruncles.

Thèses de Bordeaux, 1911.

Puerperal psychoses. Huot (No. 51) distinguishes the cases due to toxi-infection and those due to psychopathic constitution.

Pyosalpinx bursting into rectum. Alexandre (No. 59).

Ocular troubles in suppressed menstruation. Piganeau (No. 68).

Actual cautery in phlebitis. Tapie (No. 70).

Eclampsia. Chavoix (No. 71) studies 89 cases in the Bordeaux maternity.

Thèses de Lyon, 1911.

Uterine inversion treated by posterior colpohysterotomy. Wies (No. 87) studies various surgical procedures and recommends conservancy as the uterus may well re-establish its functions. Ablation is justified only in old women or if the uterus is damaged by extensive sloughing.

Albuminuric retinitis of pregnancy. Guerin (No. 88). The gravity of the renal condition is the criterion. Induction of labour where necessary.

Survival of premature twins of healthy or tubercular mother. Prinaris (No. 45) working at the Remond "nursery," which takes over feeble children from the maternity, found that the mortality in the first category is small. Many in the second die of broncho-pneumonia and those surviving do not thrive so well.

E. H. L. O.

REPORTS OF SOCIETIES.

ROYAL SOCIETY OF MEDICINE.

Obstetrical and Gynæcological Section.

Meeting held Friday, November 3rd, at Chandos Street.

The President, Dr. Amand Routh, in the Chair.

Specimens.

Dr. P. Cole: Broad ligament cyst of undoubted Müllerian origin, illustrated by photos and microscopic slides.

Mr. William Turner and Dr. Lockyer: Cancer of uterus and one ovary subsequent to double salpingectomy.

Dr. Hubert Roberts: Tuberculosis of the uterus, with microscopic sections.

Dr. Macnaughton-Jones: (1) Rare books from Prof. Klein (Munich), (2) necrotic fibroma of ovary with carcinoma of the uterus, (3) ovarian cystoma of unusual size, (4) microscopic sections of carcinoma vulvæ.

Dr. Inglis Parsons: Fibroma of uterus with carcinoma of cervix uteri.

Dr. G. Banister: Case of chorionepithelioma with unusual characters.

T. Copeland Savage, F.R.C.S. (Auckland, New Zealand), (introduced by Herbert R. Spencer, M.D.), read a paper on "Full Term Extra-uterine Gestation—Laparotomy during Spurious Labour—Recovery of Mother with Living Child."

Mrs. W. M., of Ranpo, New Zealand, æt. 27, primipara, was a patient of Dr. H. O. Jones, of Auckland. She had been married 18 months. Early in January she consulted a lady doctor on account of severe abdominal pains and intermittent hæmorrhage of three weeks' duration, coming on after three months' amenorrhœa. She was said to have had a miscarriage. She was examined in a nursing home under chloroform, and said to have a tumour and displacement. In March she became aware of fœtal movements, and as her abdomen was getting larger she consulted another doctor, who said she was 5½ to 6 months pregnant. At the end of May she left her home in the "back-blocks" and came to Auckland with a view to being confined in a maternity home. On June 6th the patient had a good deal of pain, and Dr. Jones was sent for. He found no evidence of the onset of labour. During the following day intermittent pains continued, but Dr. Jones was not sent for till 5 p.m. on June 8th, when the pains were more severe and frequent. On examination the cervix was found to be drawn up behind the pubes, and a rounded mass, the size of the fist, occupied the pouch of Douglas and depressed the posterior vaginal vault. Dr. Savage saw the patient at 6 p.m. Rhythmical contractions could be felt and seen. Fœtal movements were felt and the fœtal heart heard. The feet could be felt in the left iliac fossa, and the head was very readily palpable. Per vaginum, the os was high up and close under the pubes. The one striking feature was that the cervix and lower uterine segment were very slightly softened and showed no expansion. Behind the cervix a rounded mass was felt pushing down the fornix, which was made out to be the shoulder. A sound passed into the uterine cavity for a distance of 9½ inches in the direction of the umbilicus.

The patient was very anxious to have a living child, so she was given morphia to ensure a night's rest, and abdominal section was performed the following morning at 10 a.m.

Operation.—Tight elastic tourniquets were placed high up on each thigh. An incision was made from 2½ inches above the umbilicus to 1½ inches above the pubes. The parietal peritoneum was slightly adherent to the abdominal contents. The expanded uterus reached the level of the umbilicus, and it, with the enlarged broad ligaments, covered more than half the mass. In the upper part the tranverse colon and great omentum were spread over the tumour, the lower margin of the omentum being adherent to the upper margin of the uterus and broad ligaments. The placenta could be palpated through the omentum, and was obviously forming the anterior part of the fœtal sac, and obtaining its chief blood supply from the omental vessels, which were enormously dilated. Dr. Jones now compressed the aorta, while the upper margins of the broad ligaments were freed and the ovarian arteries doubly ligatured. The large omental vessels were then ligatured three-fourths of an inch from the margin of the uterus, and the omentum separated from the margin of the uterus, so as to display a small area of placenta and fœtal sac. The placenta was lying in front, covered in the upper part by the omentum and below by the expanded uterus and rigid broad ligament. A small part of the amniotic sac was exposed under the left broad ligament. This was ruptured with the fingers, and the head of the child firmly grasped and extracted. The cord was doubly clamped and divided, and the child handed to an assistant. The placenta was then rapidly removed, during which proceeding the hæmorrhage was furious and alarming. It ceased when the cavity was rapidly plugged with gauze pads. Pressure on the aorta was now relaxed and all obvious bleeding points secured. The aperture in the fœtal sac was diminished in size and the edges stitched to the abdominal wall. The plugs were removed, and it was repacked with two six-yard rolls of gauze.

By this time the patient was suffering much from shock and loss of blood. The tourniquets on the thighs were released and the lower limbs bandaged tightly. Rectal and subcutaneous saline was administered, after which the patient soon rallied.

Convalescence was fairly rapid and quite satisfactory. The temperature was raised from the fourth to the sixth day after the operation to 102·4°, after which it steadily fell to normal. The discharge from the sac was offensive for a time owing to some sloughing of portions of placental tissue, which was eventually removed with forceps. The wound was quite healed by the fortieth day, and she left the nursing home at the end of seven weeks.

The infant weighed 4 lb. 10 oz. at birth, and caused a good deal of anxiety for some time, but when last seen on March 20th weighed 22 lb. and was perfectly healthy and well.

Dr. Eden had operated in one case of extra-uterine gestation at term. In his case the gestation sac was intra-ligamentary, the fœtus dead, and the sac infected. He thought that immediate removal of the placenta was usually practicable when the child was dead. Quite a number of cases had been recorded where removal of the placenta had been successfully accomplished while the child was living.

Dr. Giles said the most striking feature of the case was the fact that the operation was performed while the child was alive. Dr. Giles had seen two cases of extra-uterine gestation at term. In the first case it was quite easy to pass the finger into the uterus and prove that this organ was empty. In the second case the child was alive, and he deliberately waited a month till the child was dead. Dr. Giles referred to the occasional presence of resonance over the abdomen as suggesting the possibility of the pregnancy being extra-uterine in a doubtful case. In a normal pregnancy there was always dulness over the abdominal tumour.

Dr. Hubert Roberts referred to the difficulty in resuscitating the child after its removal from the abdomen in Dr. Savage's case. He had observed the same trouble

in a case of delivery by Cæsarean section. In his opinion it was due to shock rather than asphyxia.

Drs. WILLIAMSON and BARRIS read a paper on "Pyelonephritis of Pregnancy, with Specimen of the Urinary Organs."

The case was that of a primipara, æt. 19, who during the seventh month of her pregnancy was seized with acute abdominal pain in the right kidney region and vomiting. The urine contained pus and a coliform bacillus which was identified as the B. paratyphosus. There were no clinical signs of cystitis. The patient was treated by rest in bed, milk diet and bland drinks, and was given a mixture containing urotropin and potassium citrate. The symptoms rapidly improved. Ureteral catheterisation was performed after the temperature had been normal for six days with a view to ascertaining the condition of the renal pelvis. The patient never fully recovered from the anæsthetic and died twelve hours later.

At the postmortem the bladder appeared healthy. The right ureter was dilated above the level of the pelvic brim, which was 4 in. from the bladder. The left ureter was dilated along its whole length. The pelves of both kidneys were dilated somewhat, and in their substance within the cortex were several small abscesses. From these abscesses, as well as from the ureters, the B. paratyphosus was obtained.

As the woman died undelivered, cultures and examinations were made of the liquor amnii, the placenta, and the fœtal blood, but no organisms were thus obtained.

Dr. BLACKER had recently had two cases of pyelitis under observation in which the bacillus paratyphosus had been isolated. The cases followed Wertheim's operation for cancer. One patient was extremely ill, the other, although having high temperature, was comparatively well. Dr. Blacker thought catheterisation of the ureters should be avoided in these cases. He discussed the cause of the dilatation of the ureters; he was not satisfied that vaccine treatment had any definite influence.

Dr. AMAND ROUTH agreed that the dilatation of the ureter was not due to the paturient uterus. It was a pity the authors could not prove their theory that the renal infection had been *viâ* the blood stream by the discovery of the bacillus in the blood or tissues.

Dr. WILLIAMSON, in reply, said that pyelonephritis was most common during the fifth and sixth months of pregnancy. He attributed the dilatation of the ureter to compression between the bones of the pelvis and the enlarged uterus. At St. Bartholomew's Hospital Dr. Williamson had used autogenous vaccines as a routine treatment in all cases of pyelonephritis admitted during this year, but he was not yet able to express an opinion as to their value. Dr. Williamson defended the method of treatment by catherization of the ureters, and pointed out the marked improvement which had followed the evacuation of pus pent up in the renal pelvis by this means.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Meeting held at Liverpool, October 20th, 1911.

The President, Dr. J. B. HELLIER, in the Chair.

CARCINOMA OF THE CERVIX WITH COMPLICATIONS.

Dr. HELLIER related the history, and showed the specimen, of a case of carcinoma of the cervix, complicated by pregnancy and treated by abdominal panhysterectomy. The operation necessitated the division of one ureter which was subsequently implanted in the bladder. The patient made a good recovery.

Fibroids Complicating Pregnancy.

Dr. W. E. Fothergill (Manchester) described the case of a patient whose first pregnancy ended in early abortion. Early in her second pregnancy abortion was threatened, and it was found that the uterus contained three fibroids, one on either side, and one behind, which occupied the pelvic cavity. At the sixth month there was an attack of pain and fever, which suggested that red degeneration was going in. The pregnancy continued, however, until within a week of time, when the membranes ruptured without the onset of labour. The child was delivered with forceps after manual dilatation and after the fibroid which occupied the pelvis had been pushed up. The patient's pulse and temperature remained normal for six weeks after the confinement, when pain, fever, and vomiting occurred. Supravaginal hysterectomy was done, and the fibroids were all found to contain pus.

Pelvic Peritonitis Following Appendicitis.

Dr. Fothergill also showed the corpus uteri and both appendages removed from a virgin, æt. 42, by the abdominal route, on account of pain of long standing, and hæmorrhage which remained excessive after curetting. The organs were buried in adhesions, and the patient's old pelvic peritonitis doubtless dated from an attack of appendicitis with suppuration, which was relieved by operation in 1902. The uterus contained a fibroid polypus the size of a hazel nut, which accounted for the hæmorrhage. Its existence was not suspected.

Dr. Arnold W. W. Lea related a case of fibromyoma, which obstructed labour at full term in a multipara, æt. 36, with a history of four previous deliveries. She was admitted to hospital during labour, the membranes having ruptured. The cervix admitted two fingers, but was pressed back to the sacrum by a large myoma occupying the pelvis, and reaching to the level of the umbilicus. The child lay in the upper portion of the uterus. As delivery through the vagina was impossible, Cæsarean section was carried out, followed by supra-vaginal hysterectomy. The child was living, and weighed 6½ lbs. The patient made an uneventful recovery.

REVIEW.

"Vaginal Coeliotomy." By S. Wyllis Bandler, New York. Octavo, pp. 450, with 148 illustrations. London: W. B. Saunders & Co. 1911.

Although in his preface Dr. Bandler remarks that he has never given to vaginal coeliotomy the extreme praise accorded to it by its enthusiatic exponents, yet this work testifies to enthusiasm sufficient for the production of a clear and most useful account of the technique of major vaginal work.

The opening chapter is devoted to posterior coeliotomy and its applications, and then follows an account of the anterior operation and the procedures of which it forms part. Probably most operators who prefer the abdominal route will feel that the author has not been altogether happy in his list of indications for the anterior operation, but his impartiality is illustrated by a formidable list of seventeen contra-indications. It is interesting to note that "most cases of ectopic gestation" are included in this list, and indeed Dr. Bandler practically limits the anterior operation to cases in which the tube and its contents are intact, and posterior coeliotomy to cases in which there is doubt in diagnosis of the nature of a retro-uterine swelling. If by the latter method of attack a hæmatocele be revealed, removal of the tube in non-infected cases is recommended by the anterior route or by laparotomy. Conservative operations for the cure of cystocele and retro-deviations, and vagino-fixation are fully described, and an excellent account is given of the complete plastic operation for total prolapse of the uterus. This is one of the best sections of the book, profusely illustrated as it is with plates depicting every step of the operation. Dr. Bandler is always lucid and concise in his descriptions of technique, and it is only when he strays from his subject proper that he touches on really controversial matters, as for instance in the description of the factors leading to prolapse. The chapter on simple vaginal hysterectomy is another valuable section, and one notes that the author prefers to leave the peritoneum unsutured and closed merely by a gauze drain. This is probably a wise precaution since posterior coeliotomy "is an essential preliminary to practically all the operations for the vaginal removal of the uterus." Surely it would seem more rational to make it the penultimate step and then close up the peritoneum entirely. Section of the uterus is advocated when for any reason delivery of the fundus is rendered difficult. After excellent accounts of myomectomy, hysteromyomectomy, and vaginal Cæsarean section, the author introduces what he terms "minor vaginal Cæsarean section." The latter denotes splitting of the anterior and posterior lips of the cervix up to the internal os after preliminary separation of bladder and Douglas' peritoneum from the cervix, and it is to be performed "for the purpose of accomplishing a rapid and relatively bloodless emptying of the uterus in the early months of pregnancy, or in impending unavoidable abortion in the third, fourth, and fifth months of pregnancy." . . . "I have used this method many times with happy results." The procedure is limited to certain classes of cases, but even in these one cannot imagine that it could often be required.

The book will be of great value to those who are beginning to work by the vaginal route, and no less to those who already lay claim to experience in it. The plates are good, and each series, apart from the letterpress, illustrates clearly the steps of the operation it depicts. Be he enthusiast or not, Dr. Bandler is to be congratulated on the result of his labours.

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